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ORIGINAL ARTICLES

THE PHYSIOLOGICAL EFFECTS OF RADIATION—THE ELECTRO-MAGNETIC SPECTRUM

BY W. T. BOVIE

Asst. Professor of Biophysics, Harvard University

A VERY illuminating experiment dealing with the influence of light on the growth of chickens (and, incidentally, what proved true of the chicks is at least in part true of human babies) was performed at the State University of Maine. This was widely published in the newspapers at the time, but a brief resumé is given to refresh the memory, and to focus attention upon the spectral limits of the light that was responsible for the results.

A clutch of two hundred and fifty chicks that

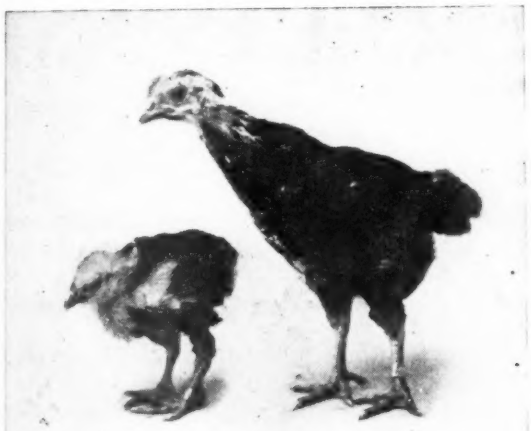

FIG. 1. The larger chicken received an exposure to ultra-violet light from the quartz mercury vapor lamp.
The smaller chicken received only the sunlight which had passed through glass.

were about one week old was placed in a greenhouse from which the plants had been removed.

They were divided into three groups. The chickens of the first group were allowed to run outside in the open sunlight, although they came into the greenhouse to sleep and eat. The other two groups were confined to the greenhouse throughout the experiment.

The chickens in the second group were exposed to the rays of a quartz mercury vapor lamp for twenty minutes each day. The chickens of the third group were shielded from the light of this lamp so that they received only the sunlight which passed through the glass roof of the greenhouse.

Figure 1, taken at the end of the fifth week, in which the larger chick represents the chickens from groups one and two and the smaller chick represents the chickens from group three, shows the typical development of these chickens.

Apparently, the chickens in group three which were exposed only to sunlight which had passed through the glass roof of the greenhouse have lacked some essential in the environmental conditions experienced by those receiving either direct sunlight or sunlight from the quartz mercury vapor lamp. This lack in the environmental condition must be found in the differences in the illumination to which the chickens were exposed, for no differences in diet produced discernible results.

This difference in illumination will be made clear from the following discussion. The radiations we receive from the sun contain heat, visible light and ultra-violet rays. These do not, however, exhaust the possibilities in radiation, for there are other rays, far more rapid in their vibrations, that can be and are produced by other sources. Such radiations are emitted by the quartz mercury vapor lamp, the X-ray tube and radio-active substances.

If one is to appreciate the relation of these types of rays and to understand the quality of the effects produced a little preliminary study is required.

If we arrange all these radiations according to their wave lengths we will have what is known as the "electromagnetic spectrum."

It is customary to measure wave lengths of light in metric units and the range from the longest to the shortest wave lengths is so great that units of several different magnitudes are employed. In order to show the relation of these metric units to each other and to indicate the wave lengths of different regions of the spectrum, it will be convenient to lay off a scale showing the entire metric system of length, and

then to superimpose on this scale the electromagnetic spectrum.

Starting then from the decimal point, we lay off to the left, according to the usual Arabic system of notation, the meter, the dekameter, etc., as far as may be necessary, each place representing the one to its right when multiplied by ten. To the right of the decimal point, we lay off, tenths of a meter, hundredths, thousandths of a meter and so on each being a dimension obtained by dividing the place to its left by ten.

The meter is approximately one yard in length. The fourth place to the left of the decimal point represents kilometers which are approximately six-tenths of a mile long. It will probably surprise most people to see how few places are needed to express the greatest distances that the human mind conceives, the distances of the stars. These are reached at from seventeen to twenty-two places to the left of the decimal point. In like manner, the smallest dimensions which we know lie scarcely more than twelve places to the right of the same point. Between these limits, some thirty-six places, lie all the linear magnitudes of which we have knowledge, both great and small.

On this scale, which represents wave lengths ranging from zero up to one micron, are indicated some of the characteristic phenomena associated with the wave lengths represented. At the left, and extending far beyond the scale, are the infra-red or heat rays. Visible light is produced by vibrations whose wave lengths range from a little less than four to nearly eight on the scale, and the color sensations produced are indicated. Glass ceases to be transparent at wave lengths indicated at about three and one-tenth on this scale, and at about two and nine-tenths solar radiation ends. These figures, of course, are expressed as tenths of a micron.

The ultra-violet region has been provisionally divided into regions which might be recognized as colors to eyes adapted for seeing ultra-violet rays. For convenience the names of ultra-violet "colors" are printed below the line of wave lengths. Sunlight ultra-violet includes the ultra-violet found in sunlight from the end of the visible to about wave length 3000 Angstrom units. Quartz ultra-violet includes the ultra-violet light not found in sunlight, extending roughly from wave length 3000 to wave length 2000 Angstrom units. Fluorite ultra-violet designates that part of the light which

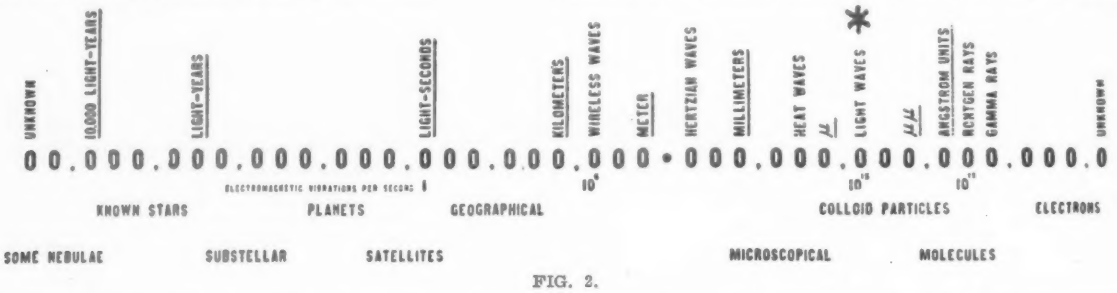

FIG. 2.

Figure 2 is such a scale and on it we lay off the electromagnetic spectrum. The underscored words above the figures indicate accepted units of length. Below this scale, in the larger type, are arranged the objects (worlds or electrons) of the corresponding size.

As this article is to treat especially of heat, light and the more rapid vibrations, it will be more useful to us if we take just one of the places (represented by a *) and expand this to a larger scale. It should be noted that while the first scale is logarithmic, the second (Fig. 3) is arithmetical. Thus, between the 1 of this scale and its 0 is included all the distance, diminishingly expressed, that lies to the right of the place indicated by the *.

passes through fluorite but not through quartz. This light was investigated by Schumann and is often referred to as the Schumann ray. The Lyman ultra-violet is the light investigated by Theodore Lyman.

Above the line in the ultra-violet region are a number of names so placed as to indicate the limits of transparency of the substances named. But few substances are transparent to the extreme ultra-violet rays. The substances named are selected from less than a dozen known to be transparent in this region of the ultra-violet. The rate of vibration is perhaps more important than wave length. The number of electromagnetic vibrations per second is indicated by the small figures below the line. It will be seen

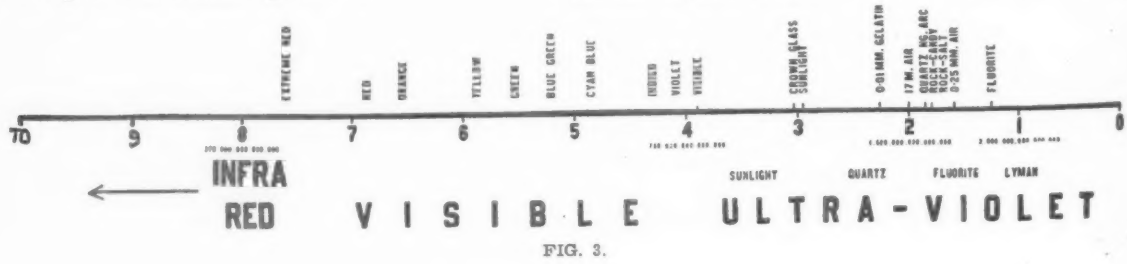

FIG. 3.

that a doubling of the vibration frequency occurs between wave lengths 8000 and 4000 Angstrom units, giving us the whole visible spectrum from extreme red to the violet. A second doubling of the vibration frequency occurs in the sunlight and quartz ultra-violet, while there is a third doubling in the fluorite ultra-violet.

It will be seen from Figure 3 that there is a very restricted range of wave lengths in the sunlight ultra-violet that is not transmitted by glass, and further, in comparison with the length of the visible spectrum this restricted range of wave lengths may be described as a monochromatic band lying at the extreme end of sunlight. The narrowness of this band is, however, no criterion of its physiological effects.

Since in these experiments the chickens grew and developed normally in full sunlight and since they did not grow and develop in a normal manner in light transmitted by glass it is evident that chickens, at least, are vitally dependent upon this narrow band of the ultra-violet.

The clinician should be interested in these experiments because it has been shown that important physiological processes in growing children are influenced by light lying in this same narrow spectral band.

UTEROPLACENTAL APOPLEXY

Report of Two Cases with a Review of the Literature

BY LOUIS E. PHANEUF, M.D., F.A.C.S., BOSTON

In 1776, Rigby established the difference between hemorrhage due to the premature separation of the normally situated placenta and that due to placenta previa. He referred to the former as accidental and to the latter as unavoidable hemorrhage. The term *ablatio* placentae has been suggested by Holmes, and *abruptio placentae* by DeLee to describe the condition.

The separation of the normally attached placenta may vary from slight to complete detachment. The symptoms vary with the amount of separation present; these may be so slight, with a small degree of detachment, that the condition is established only on examination of the placenta after the completion of the third stage of labor; on the other hand, in the severe type of case the symptoms and signs are so apparent that no doubt as to the diagnosis exists.

Separation of the placenta usually occurs in the last three months of pregnancy or during labor; this is accompanied by hemorrhage, extenal or internal, and pain is always present; while the latter symptom is not associated with the hemorrhage of placenta previa.

The uterus is enlarged, has a ligneous consistency and does not retract. The fetal heart tones are usually faint or absent, and the uterus is so tense that it is usually impossible to feel the fetal parts.

In connection with the severe type of premature separation of the placenta there exists an effusion of blood, varying in extent, in the myometrium, and a dissociation of the individual muscle fibers. The process may involve the anterior or posterior uterine walls and in some cases may extend to the broad ligaments and to the tubes and ovaries. The uterus has an ecchymotic mottled appearance which gives it the appearance of an ovarian cyst with a twisted pedicle. The point of maximum involvement of the uterine wall is usually found at the site of the placental insertion, and the lesion may be unilateral or bilateral, but always more severe on the side toward which the placenta has its greatest area of attachment.

To this pathological involvement of the uterine wall Kolisko[106], in 1903, gave the name of infarction of the uterus, (*infarctus hemorrhagicum uteri.*) In 1911, Couvelaire[37] described a case in great detail, and made the only really important contribution to the subject since that of Rigby. He suggested the term *uteroplacental apoplexy* (*apoplexie utéro-placentaire,*) a terminology still in use at the present time. In 1912 the same author reported two other cases.

The term uteroplacental apoplexy then describes a condition in which there are marked changes in the uterine wall as a result of extensive detachment of the placenta; and a tendency of the hemorrhagic process to reach its acme under the peritoneum. Because of this tendency peritoneal fissures or external ruptures are not infrequently met and they have been reported as high as 15 per cent by some writers. In 1919, under the title of "Abruptio placentae associated with spontaneous rupture of the uterus," I[139] reported in *Surgery, Gynecology and Obstetrics,* two cases of uteroplacental apoplexy in which the external rupture involved an area two inches in length, and extended through the peritoneum and muscularis but not through the mucosa. In both cases the rent was enlarged and the child was delivered through it. While these deep ruptures are rather uncommon, the lesser grades of peritoneal fissures are not infrequently met. These two cases belonged to the so-called tragic group the first died, five days after operation, and the second recovered and was subsequently delivered by an abdominal cervical cesarean

section. At the time of this second operation the previous scar was found perfectly healed even though the rent had been found in the hemorrhagic uterine wall.

In addition to these two cases previously reported, I have operated on two more recent ones which form the basis of this paper, which deals with the severe type of detachment of the normally situated placenta associated with extensive uterine changes described as uteroplacental apoplexy.

Case No. 1. Mrs. B. S. Hospital No. 7189, a quintigravida, aged 33, born in Ireland; was admitted to the Gynecological and Obstetrical Service of the Carney Hospital on August 1, 1923. Her family and past histories were negative. Her menstrual history began when she was fourteen years of age; the periods were regular, every 28 days, and lasted three days. She had slight pain during menstruation and her last period had occurred in November, 1922; she did not remember the exact date. Her confinement was therefore expected in August, 1923. Her obstetrical history revealed that she had had no abortions or miscarriages; that a stillbirth had occurred at term, following an instrumental delivery in March, 1916, and that she had had three living children, delivered normally in May, 1917, November, 1919, and April, 1921, respectively. She had been well during the present pregnancy and gave no history of trauma. The physical examination showed the heart, lungs, thyroid, breasts, bony frame and extremities to be normal, and the pelvic measurements were within normal limits.

The gravida started in labor at 6 P. M. on July 31, 1923; she was admitted to the Carney Hospital late that evening, and seen by me at 12.30 A. M. August 1st, 1923. The examination revealed a uterus the size of a full term pregnancy, ligneous in consistency, the fetal parts could not be palpated, and the fetal heart sounds could not be heard. On rectal examination the cervix was thick, not taken up, and admitted the tip of one finger. There was considerable hemorrhage present; the vertex was presenting, and meconium was escaping from the vagina. She had been examined vaginally outside before entering the hospital. The patient showed signs of extreme shock. A catheterized specimen of urine disclosed the following:—color pale; specific gravity 1022, sugar absent, slightest possible trace of albumin, numerous leucocytes, squamous epithelium, and bacteria.

The diagnosis of severe hemorrhage from ablatio placentae having been established, the patient was prepared for a laparotomy which was performed on August 1, 1923, at 2.30 A. M. Under ether anesthesia the abdominal cavity was entered by a median suprasymphyseal incision about five inches long. On opening the peritoneal cavity it was found that the anterior wall of the uterus was edematous, ecchymotic, purple in color and friable. The area of infiltration extended from the cervix to the fundus on the anterior uterine wall; there was no apparent involvement of the posterior wall, and no undue torsion of the uterus was observed. The cervix was slightly edematous, but was not involved in the hemorrhagic process. A Krönig cervical cesarean section was therefore performed. The bladder was separated from the lower uterine segment in which an incision five inches long was made. On entering the uterine cavity the placenta, which had an anterior insertion, was found almost wholly detached and the uterus filled with blood clot. A still-born female fetus weighing five pounds was extracted by the vertex. The placenta which weighed twenty ounces was removed, together with the membranes and the blood clots. The uterus was injected with 1 c.c. of pituitary extract; the cervical incision was closed in two layers with No. 2 chromic catgut, and the bladder peritoneum was sutured to its original position on the uterus with No. 0 chromic catgut. 1 c.c. of aseptic ergot was injected in the thigh. Since the uterus appeared to remain well contracted, the abdomen was closed in layers. The parturient was returned to her bed in fair condition. One hour after delivery the uterus was firmly contracted.

The patient convalesced satisfactorily; the highest temperature was 101.4 and the highest pulse 126 on the third day after delivery; both remained normal after the sixth day. The abdominal sutures were removed on Aug. 11, 1924, and the incision was found healed by first intention.

On August 16th, 1923, the day on which the patient was discharged, the following note was made:—"The incision is healed throughout; there is no induration or tenderness; the uterus is well involuted, and is in good position; the adnexa are normal; the pelvic organs are normal except for old lacerations."

Case No. 2. Mrs. S. M. Hospital No. 10424, a secundigravida, aged 34, was admitted to the Gynecological and Obstetrical Service of the Carney Hospital on May 23, 1924. Her family history revealed the fact that her mother had died of heart disease during pregnancy, at term; while her past history was negative. Menstruation was established when the patient was fifteen years of age; the periods occurred every twenty-eight days, without pain, and lasted three days. She menstruated last on September 19, 1923, and her confinement was expected on June 26, 1924. She was first seen at the prenatal clinic on November 22, 1923, and her obstetrical history showed that she had had eclampsia with her first pregnancy and had been delivered of a still-born child at the Carney Hospital. The examination at the time of her first visit demonstrated that her heart,

lungs, thyroid, breasts, bony frame and extremities were normal. Her blood pressure was 188 systolic and 120 diastolic. Her blood Wassermann was negative. The external pelvic measurements were the following—bitrochanteric 36.5 cm; intercrestal 28 cm; interspinous 23 cm; external conjugate 22 cm; right oblique 26 cm; left oblique 26 cm. The urine examination revealed the presence of albumin and casts. On account of the signs of toxemia she was advised to enter the hospital. Under dietary treatment and rest in bed for five days the albumin disappeared, and the blood pressure came down to normal limits. She was discharged from the hospital, and was seen every two weeks at the prenatal clinic. On May 22, 1924, the day before her admission, she made one of her bimonthly visits to the clinic; her blood pressure was then systolic 120 and diastolic 80; she was free from symptoms, and felt well in every way. The gravida stated that during the fifth month of her pregnancy she had fallen in the street and had struck her abdomen; there was no other history of trauma.

During the forenoon of May 23, 1924, the patient entered the hospital, accompanied by her family physician who stated that he had been called to her bedside on account of a severe hemorrhage. He did a vaginal examination which disclosed the cervix to be small, hard and undilated. Upon her admittance there was considerable oozing from the vagina, and the blood pressure was 164 systolic and 120 diastolic. She was examined by me at noon of the same day; she was in extreme shock; the temperature was 100, the pulse 120 and the respiration 36; the uterus was at the level of the xiphoid cartilage, tense, ligneous in consistency; the fetal parts could not be determined, and the fetal heart tones were not heard. The rectal examination revealed a long closed cervix, and the oozing was persistent. A catheterized specimen of urine showed the following analysis—color orange; specific gravity 1025; reaction acid, sugar absent; considerable bile pigment; a very large trace of albumin; the sediment consisted of a very large number of coarse granular, fine granular and hyaline casts; numerous leucocytes and some erythrocytes. The gravida was given shock treatment, and her blood was tested against her husband's and her brother's for transfusion; both were found to be suitable donors. At 8 P. M. the patient was slightly improved, but the condition of the uterus was unchanged; she was therefore transfused from her husband; 500 c.c. of citrated blood being administered, and she was prepared for an abdominal delivery.

Under ether anesthesia the abdomen was opened by a median incision extending from the symphysis to the umbilicus; the uterus was slightly rotated to the right; free blood, estimated at 8 ounces, and numerous dark colored clots were found in the pelvis. The uterus was dark purple in color and the ecchymotic process involved the whole of the uterine body; the tubes, ovaries and broad ligaments were edematous; there were two subserous myomata, one anteriorly and the other posteriorly; the cervix, although edematous, was not involved in the apoplectic process. The uterus was entered by an incision on its anterior wall; the placenta was found completely detached, and the uterus contained numerous dark clots. A still-born premature male fetus was extracted by the vertex, and the detached placenta, membranes and blood clots were removed. The uterus was injected with 1 c.c. of pituitary extract, and 1 c.c. of aseptic ergot was given in the thigh. The uterus remained flabby and failed to contract. For this reason it was removed supravaginally together with the adnexa. The cervix was closed anteroposteriorly with interrupted sutures of No. 2 chromic catgut, and the vessels were ligated with the same material. The cervical stump was suspended by the broad ligaments, and all the raw areas were covered over with the bladder peritoneum. After sponging out the blood from the pelvis the abdomen was closed in layers. The puerpera was returned to her bed in satisfactory condition.

On May 26, 1924, the urine examination showed the following—color cloudy, reaction acid, specific gravity 1030, albumin absent, sugar absent; the sediment consisted of amorphous urates. The highest temperature during the convalescence was 101 the day after operation, and it gradually dropped to normal. On June 1, 1924, an hematoma was found in the abdominal incision; the sutures were removed and the blood clot was evacuated. The incision was dressed daily with dry sterile gauze.

On June 11th, 1924, nineteen days after operation, the following discharge note was made:—"The abdominal incision is well healed; the cervical stump is suspended high in the vaginal vault; there are no masses or areas of tenderness in the pelvis."

The patient left the hospital well on that day, and reported a month later, at which time the examination was the same as the above, and she was free from symptoms.

SUMMARY

Two cases of uteroplacental apoplexy following premature detachment of the normally implanted placenta are reported. In one the placental separation was almost complete, while in the other the placenta was free in the uterine cavity. The apoplectic process was much more severe in extent in the second case than in the first. Both had albuminuria, and the urine of the second gravida showed numerous casts in addition. Uterine torsion was not a prominent factor in either case, and trauma could hardly be considered as a cause; it was absent in the

first case, and had occurred about three months before the onset of the symptoms in the second. In both instances the lower uterine segment was free from hemorrhagic infiltration. Delivery was accomplished by the abdominal route: the first patient had an abdominal cervical cesarean section; her uterus contracted well, and was left in. In the case of the second gravida, the incision was made in the anterior uterine wall, and the uterus was removed on account of the extensive hemorrhagic infiltration, the persistent hemorrhage and the failure of the organ to contract. Both fetuses were still-born. Both puerpera were discharged from the hospital in good physical condition, and have remained well since.

Willson[201] gives the following theories regarding the causation of the lesions.

1. "That the distention of the uterus from the intra-uterine hemorrhage results in stretching its wall sufficiently to produce tearing of the vessels."
2. "That the blood in the uterine wall is forced into it through its contractions over the intra-uterine hemorrhage."
3. "That obstruction to the venous flow from the uterus through torsion or other misplacement or through thrombosis of the large venous trunks results in a back pressure causing the smaller veins and capillaries to give way."
4. "That the condition is the result of a toxemia."

In the cases he reviewed Willson observed clinical or pathological evidence of toxemia present in approximately 90 per cent, and in 8.7 per cent there had been an associated eclampsia.

Morse[33, 34] after a series of experiments upon rabbits came to the conclusion that the underlying cause of uteroplacental apoplexy was an obstruction to the circulation of blood through the uterus. Where this was provoked artificially in pregnant rabbits, by ligating the veins of one horn of the bicornulate uterus, the resulting pathological lesions duplicated those found in women suffering from this complication of pregnancy, while the untreated horn remained normal. He further stated:—"Probably an excessive mobility of the human uterus predisposes to a similar though spontaneous constriction of the veins of the broad ligaments of women advanced in pregnancy, and consequently close attention should be given to the degree of support the abdominal wall affords the uterus, especially in multiparous women." The author compared the changes of the uterine wall in uteroplacental apoplexy to those of a myoma with a twisted pedicle.

Polak[143, 144] found that previous toxemia was a predisposing factor and that many cases had an apoplectic origin from torsion of the uterus; while very few could be attributed to trauma. In a uterus removed supravaginally, for uteroplacental apoplexy, he illustrated how the uterine incision was made at the extreme left of the uterus on account of the severe torsion of the organ at the time of operation. He grouped his cases as tragic and non-tragic depending upon the severity of the symptoms and the amount of involvement of the uterine wall.

Portes[146] in a detailed study of 73 cases of uteroplacental apoplexy found trauma as a cause but three times. A relatively or absolutely short cord has seemed responsible for the separation of the placenta in some cases. On the other hand Ahlström and Essen-Möller have observed that it is impossible to separate the placenta by pulling on the cord without breaking it. For this reason the role ascribed to the cord is open to discussion and should not be retained as an important cause. Uterine torsion was not observed in this series of cases, and in the cases published by Couvelaire he stated that the apoplectic uterus was in normal position. Inflammatory conditions appear only as co-existing factors in uterine apoplexy. This applies especially to endometritis as a cause. In other words endometritis may exist during uteroplacental apoplexy but is neither constant nor characteristic. The author states that the clinical as well as the anatomo-pathological study of uteroplacental apoplexy seems to show that the existing cause is a toxemia. This toxemia was referred to by Pinard as hepato-toxemia while Bar described it as "Eclampsisme" pre-eclamptic state. In his 73 cases albuminuria was present in 90 per cent and convulsions in 8.3 per cent. In addition to this there were two cases showing no clinical evidence of toxemia but where the lesion was discovered at autopsy, thus demonstrating that in 73 cases 91.3 per cent showed anatomical and clinical signs of toxemia. This, therefore, tends to prove that in the great majority of cases premature separation of the placenta and uteroplacental apoplexy have a toxemic origin.

Adair[1] reported 5 cases of complete detachment of the normally implanted placenta and stated that the maternal mortality ranged from 30-35 per cent, and the fetal mortality from 85 to 95 per cent. He referred to the peritoneal fissures accompanying the lesion as incomplete ruptures of the uterus, and felt that the condition owed its origin to a toxic agent.

Findley[60] in discussing the treatment felt that when one meets a tragic case of this kind as shown by faintness, nausea, rapid pulse, pallor associated with a spastic sensitive uterus, with an absence of fetal heart tones, a cessation of fetal movements, and a rapid increase in the size of the uterus, no time should be lost in instituting heroic measures which should consist of a blood transfusion; abdominal section, the Porro operation, if the extravasation of blood is severe, and the classical section if otherwise.

Williams[197] published a detailed study of two cases of uterine apoplexy treated by supravaginal hysterectomy followed by recovery. He laid emphasis on the toxemic origin of the condition, and illustrated the involvement of the posterior wall of one of his specimens by a beautiful drawing in water colors. He was impressed by the extension of the process to the tubes, ovaries and broad ligaments, and emphasized the dissociation of the uterine muscle by the hemorrhage. The author stated that neither the term used by Kolisko (hemorrhagic infarction) nor that used by Couvelaire (uteroplacental apoplexy) correctly described the condition, but that he was not prepared to suggest a better one.

Audebert and Fournier[9] reported a case of uteroplacental apoplexy in a woman having albuminuria. Because of the extent of the involvement of the uterine muscle they performed a hysterectomy without opening the uterus. They described the uterus and its adnexa as they appeared at operation. The body of the uterus and the broad ligaments were markedly involved. The lower uterine segment was free from ecchymotic areas although it was markedly distended and showed subperitoneal edema. The placenta was still adherent by its superior pole. An enormous clot filled the uterus in such a way that the fetus was surrounded by it.

Holmes[95] in his paper "The relationship of uteroplacental apoplexy to ablatio placentae" analysed his 21 cases of premature detachment of the normally situated placenta and one case of uteroplacental apoplexy, and reviewed the literature. He stated that the syndrome of eclampsia is markedly different from that of toxemic apoplexy. So far as we know, the pathologic findings in the liver alone show many characteristic differences. The coincident attack of eclampsia and toxemia apoplexy strongly suggest that two intense poisons are liberated which produce diverse symptoms. In his opinion cesarean section should be reserved for severe cases in which the cervix is tight, and for the fulminating types of the condition. The routine removal of the uterus in cases of the toxemic type is to be deprecated. Hysterectomy should be reserved for cases in which the uterus does not retract and for those with possible infection.

Snowden[173] reported the case of a woman 34 years of age in her third pregnancy. The uterus had a dark mottled appearance suggestive of hemorrhage. At operation, which consisted of a classical cesarean section, no blood was found in the peritoneal cavity, but the uterus contained a considerable quantity. Operation was followed by recovery.

Dorsett[48] described a case of complete separation of the placenta in a primipara, aged 26. Her first remarkable symptom had been a copious uterine hemorrhage while at home writing. An hour later uterine contractions were apparent and she was sent to the hospital. She showed signs of hemorrhage and the uterus showed the typical ligneous consistency. No fetal heart sounds or placental souffle were heard. There was complete effacement of the cervix with three fingers dilatation of the os; the membranes were intact, the head was small and not engaged. Under ether anesthesia she was delivered by version of a dead male fetus, weighing 2.850 grams. The placenta was immediately expelled and apparently was loose in the uterus. After delivery typical signs of toxemia developed and the urine showed albumin, waxy, hyaline and granular casts and leucocytes. Active eliminative treatment was instituted and the patient left the hospital in 14 days. A month later the patient was well; the urine was negative and the uterus showed normal involution.

Eufinger[55] wrote about a case of premature separation of the placenta in a 36 year old septipara with external bleeding and other symptoms permitting pre-operative diagnosis. The uterine peritoneum was saturated with blood but no rupture could be found. The uterus was opened and the placenta was shown to have been almost completely detached by an hematoma the size of a child's head. The patient had been delivered in a hopeless condition, and death occurred before the completion of the operation.

The autopsy showed high grade anemia of all the organs and longitudinal tears in the serosa. In places the uppermost layer of the musculature participated in the tears, but the mucosa was everywhere immune. The largest of these fissures was an angular tear with both legs about 4 cm. long. There was an abundance of blood and coagula free in the abdominal cavity and a pronounced splenic enlargement in process of retrogression.

There was no evidence of short umbilical cord, nephritis, pregnancy kidney, endometritis, tuberculosis and acute infectious diseases, all of which favor the separation between the placenta and uterus. The possibility of a nutritional disturbance was taken into consideration for the placenta was somewhat large, a fact which might indicate under-development of the decidua.

The author holds that in severe cases of premature separation cesarean section is preferable to vaginal delivery in that it permits checking of hemorrhages from possible tears.

Frey and Armbruster[74] reported that in a series of 3,523 births observed in the gynecologic clinic of Zürich from October 1st, 1920, to September, 1922, there were 32 cases of premature separation of a normally implanted placenta. This gives an incidence of 0.85 per cent. The lowest incidence occurred during

the ages 20-24 years and increased directly in proportion to the increase in age, being highest at the ages 40-44. The fact appears to be of etiologic significance in that it seems to indicate that the physiologic elasticity and adaptability to pregnancy decrease with ascending age. In this material were found two cases in which the premature separation was repeated with one and the same patient. Other instances are on record in the literature.

The authors feel that in severe cases with hemoglobin content under 50 or in cases showing shock with closed soft parts *abdominal cervical cesarean section* under local anesthesia is the method of choice. This was done successfully in 14 cases. The authors state that total extirpation as a routine is superfluous, and advise against vaginal cesarean section because of the danger of extension of the tears in the cervical canal, the tearing of the branches of the uterine artery as well as the danger of injury to the bladder and to the ureters. This is the only instance in the literature reviewed where abdominal cervical cesarean section is advocated as the method of delivery. I had been independently impressed by this fact after delivering my case No. 1, described in this paper.

Harrison[84] described the case of a woman 26, with a negative previous history, who had shown a distinct trace of albumin in her urine for several weeks during the present pregnancy. This had been accompanied by edema of the lower extremities. In her 35th week of pregnancy she had slight uterine bleeding. She entered the hospital directly when on examination a head well down in the pelvis was found presenting; no bleeding was found, and no placenta previa was observed. Examination three hours later revealed abruptio placentae. Cesarean section was performed, the uterus was dark blue and bled freely; the placenta was completely detached; about a pint of dark clots and some free blood were found in the uterine cavity. The child could not be resuscitated, but the mother made a good recovery and left the hospital on the evening of the twenty-fifth day after operation. The author believes that the separation was due to a mild toxemia as a predisposing cause and to an automobile ride as an exciting cause.

Hildreth[92] wrote about a patient, 34 years of age, who gave a negative previous history except for the fact that in 1915 she had been refused life insurance on account of an unsatisfactory urine specimen. The menstrual history was negative; the last period was August 15, 1919, making the probable date of confinement May 22, 1920. From May 1st, about three weeks before term, she first noticed swelling of the ankles. However, she continued her work as a dressmaker, and laced her corsets almost as tightly as before her pregnancy. On May 6th she worked particularly hard, went to bed and slept well until 4 A. M. of May 7th, when she awoke with severe abdominal cramps and moderate vaginal bleeding. At about 10 A. M. she was seen by a physician who sent her to the hospital. On admission her general condition was excellent, pulse 90, systolic blood pressure 150. The urine contained a heavy trace of albumin. On examination of the abdomen the uterus was found to extend to a point 3 cm. below the ensiform. It was hard and fairly contracted but relaxed slightly at times. It was impossible to make out the fetus; there was no fetal heart and no ballottment. On vaginal examination the head was found presenting and the cervix 1 cm. dilated, soft and about 2 cm. thick; no placenta was felt.

Without anesthesia a No. 2 Voorhees bag was inserted hoping to deliver the patient from below. The bag had no effect in starting labor and on the next day was found still tightly wedged in the cervix. The uterus was still regular in outline, but now was board-like; had no periods of relaxation, and extended to the ensiform. The temperature was normal and the pulse was 80, but despite that the patient seemed anxious, and her appearance showed that her condition was graver than indicated by the temperature and pulse.

Under ether anesthesia a cesarean section was done, the abdomen being opened with a low median incision. There was a large amount of blood-tinged fluid in the abdominal cavity; the uterus was very slightly rotated to the right; there were huge deep purple veins making a large mass on either side of the uterus. The uterus, tubes, ovaries and broad ligaments were swollen, edematous and almost black in color. There were numerous large ecchymotic spots scattered over the surface of the uterus directly under the peritoneum. The uterus was opened and the placenta found completely separated, with about a quart of old clotted blood between the placenta and the uterine wall. The placenta had been attached to the anterior portion of the upper uterine segment; it had a deep purple color and its surface was covered with old clots. The child was 50 cm. long, weighed 7 lbs. 4 ozs. and had apparently been dead for some time.

After emptying the uterine cavity the wall of the uterus was observed for a number of minutes; the muscle remained flabby and showed no tendency to contract, except over a small portion of the lower segment. There were large thrombi in the veins along the cut edge and the color of the uterus changed very little after the relief of the tension. Therefore, a supravaginal hysterectomy was done, fearing to leave the uterus on account of later necrosis and infection, or postpartum hemorrhage from its atonic walls. Along with the uterus the tubes

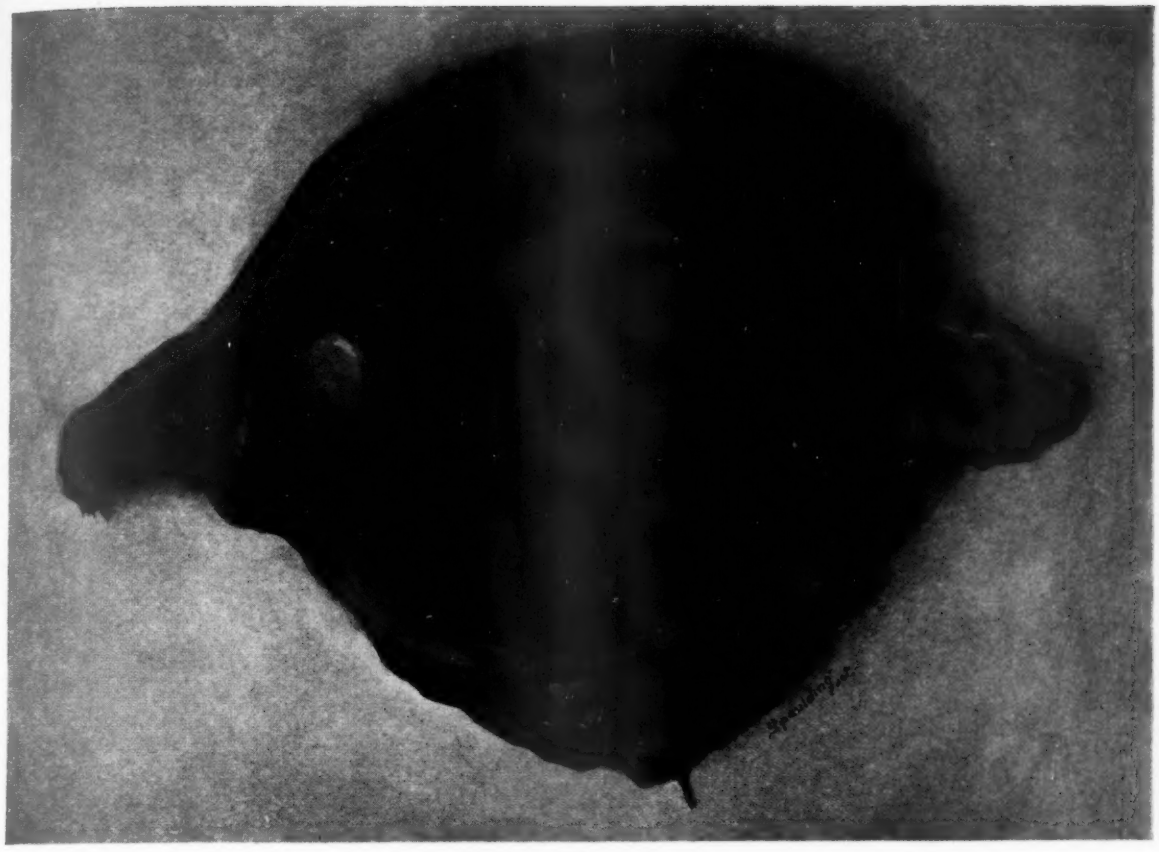

FIGURE 1. CASE NO. 2

UTEROPLACENTAL APOPLEXY. ANTERIOR SURFACE OF THE UTERUS SHOWING THE HEMORRHAGIC INFILTRATION AND THE INCISION THROUGH WHICH DELIVERY WAS ACCOMPLISHED. THE RAGGED EDGES OF THE INCISION ARE ACCOUNTED FOR BY THE FRIABILITY OF THE ORGAN. SMALL SUBSEROUS MYOMA OF THE ANTERIOR WALL.

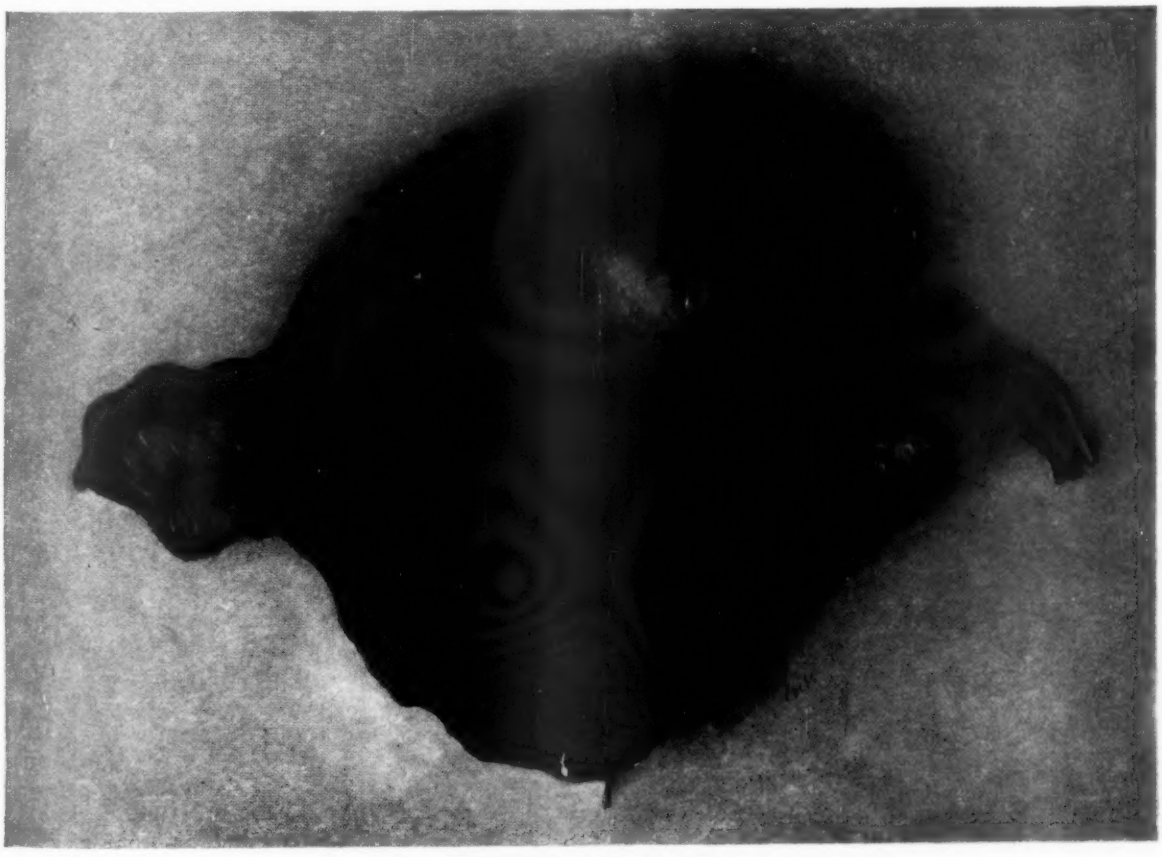

FIGURE 2. CASE NO. 2

UTEROPLACENTAL APOPLEXY. POSTERIOR SURFACE OF THE UTERUS, SHOWING THE EXTENSIVE APOPLECTIC INVOLVEMENT, AND A SMALL SUBSEROUS MYOMA. THE COLOR OF THE UTERUS WAS MUCH DARKER WHILE IT WAS IN SITU THAN AFTER ITS REMOVAL.

and ovaries were removed because of their swelling and engorgement.

The pathological report showed three conditions present, 1, inflammatory reaction, 2, interstitial hemorrhage and 3, degeneration and possible necrosis of muscle fibers. In this case there were present two causes for the hemorrhage, 1, toxemia and 2, venous stasis from extremely tight lacing.

Hillis[93] reported the case of a primipara, married, aged 35, who was in the ninth month of pregnancy. For thirty days past the urine had shown a small amount of albumin but no casts. On May 12, she was struck in the abdomen by the head of a three year old child who threw himself in her lap. This caused considerable pain at the time, but was soon forgotten by the patient. Four days later, May 16, she walked several blocks, when she was taken with moderately severe pain in the lower abdomen and back; the pain was continuous, not intermittent; one hour later fresh blood was passed from the vagina in small quantities, but continuously. The patient estimated that she lost about four ounces of blood during the first hour or two. Three hours after the pain had started examination at the hospital showed the general condition of the patient excellent; no signs of shock; pulse 94, color good; fundus one finger below the ensiform; uterus tense with increased tenderness at intervals of about two to six minutes, accompanied by pain. Pain however was constant in the lower abdomen and back. The fetal parts were difficult to outline on account of the tenseness of the uterus; the fetal heart tones were 140 to 148 in the left lower quadrant, regular, rhythmic, but somewhat variable during a minute's observation. The rectal examination showed that the cervix was not taken up, but dilated to admit a finger. During this examination half an ounce of dark colored blood was expressed from the vagina. Three hours later there was no change in the findings on examination. A classical cesarean section was done. The child was not asphyxiated. The uterus contained a firm blood clot weighing 15 ounces. The uterus was mottled in appearance and failed to contract after the injection of 1½ ampoules of pituitary extract in its walls; for this reason the organ was removed. The mother and baby were discharged from the hospital in excellent condition on the fourteenth day.

CONCLUSIONS

1. Uteroplacental apoplexy is a grave complication of pregnancy, in which there is marked hemorrhagic infiltration of the uterine wall, with dissociation of the individual muscle fibers. The process may also extend to the broad ligaments, and to the tubes and ovaries. The condition follows premature separation of the normally implanted placenta.

2. The causes of uteroplacental apoplexy are given as (1) torsion of the uterus, (2) short umbilical cord, (3) traumatism, (4) toxemia, (5) degenerative and inflammatory lesions of the decidua, (6) the presence of hemorrhage in the myometrium, or of thrombi in the intervillous spaces and decidual sinuses. The toxemic cause accounts for the great majority of the cases.

3. On observation of the uterus it is found that the lower uterine segment escapes in the process, and is free from hemorrhagic infiltration.

4. The method of delivery is largely influenced by the amount of dilatation of the cervix. If delivery is accomplished by the natural passages, the uterus should be carefully packed as a precautionary measure.

5. If, as it not infrequently happens, the patient has not started in labor, abdominal delivery offers her the best chance, since by this method it is always possible to control the hemorrhage.

6. Since the lower uterine segment usually is found free from involvement it seems logical that the incision in the uterus should be made in the cervix, rather than in the hemorrhagic corpus, Case No. 1.

7. Hysterectomy should be reserved for those cases where the uterus fails to contract, and where hemorrhage persists, Case No. 2.

8. Blood transfusion is always a valuable measure in preparing these tragic cases for operation.

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THE UNITED STATES VETERANS' BUREAU AND THE DISABLED EX-SERVICE MAN

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MANY times unjust criticism has been offered with respect to the attempt on the part of the United States Government to compensate, either through financial aid, training or employment, the disabled World War Veteran. Many, no doubt, have criticized because superficially it did appear that someone had blundered, and through neglect, or otherwise, those who evidently had no disability were too adequately compensated, and those with serious handicaps were apparently neglected. To show the difficulties under which the Government is laboring in proper adjudication of claims, I cite here six cases, only a minor part of the problems which constantly confront us.

CASE I

A man of thirty whose birth and early development, as far as could be ascertained, shows nothing remarkable. Father was alcoholic, deserted his wife, mother of claimant, many years ago, obliging her to work for the support of claimant and an only sister. He was able, however, to attend public school until the age of seventeen, when he left to go to work from the first year of high school.

Prior to service he was economically efficient, working as a carpenter a great deal of the time. January 10, 1918, he was drafted, served in the 110th Infantry of the 28th Division, saw active duty at Soisson Sector, and sustained on September 19, 1918, a wound of the left scapular region necessitating hospitalization for about six weeks. On another occasion he was slightly gassed and suffered from some inflammatory condition of the conjunctiva which readily cleared up. In May, 1919, he was discharged to civilian life and shortly afterwards filed a claim with the Bureau for compensation. He complained at this time of insomnia and restlessness as a result of his arduous war experiences. In September, 1920, he was admitted to the West Roxbury Hospital where a diagnosis of "Dementia Praecox" was made. Compensation was awarded January 5, 1920, under which he received $20 per month covering the period from May 28, 1919, to October 1st of the same year, and $80 per month from November 11, 1919, to September 20, 1920. Since this time he has received, and is receiving $100 per month, and will as long as he shows evidence of disability.

Until September, 1920, this man was being compensated for his wounds, although actually they did not interfere with his ability to carry on. $80 per month was the amount granted during the period of hospitalization. His psychosis was as yet not considered to be connected with service, but only incident to it, and it was not so connected until Washington had made special provisions that insane and functional nervous dis-

orders should be considered compensable even if they arose within five years after discharge from service.

In this case, however, all was not so easily settled. Constant opposition was met when the Government attempted to appoint a conservator and guardian so that money could be given. The mother and daughter did not feel that the boy was insane and resented the attitude of the Bureau in this direction. On more than one occasion, charitable organizations attempted to explain matters in their proper light, but to no avail. They were determined the boy was not insane, and soon developed ideas of a persecutory nature. The mother felt that the constant examinations of the boy by physicians, their search for clinical findings by using tap of a percussion hammer and the pin pricks had so destroyed his physical stamina that he was entirely useless. They felt also that there was something sinister about the attempt of the Red Cross and others to help them, and this delusion looked large and threatening.

When an attempt was made to appoint a guardian for the claimant they appeared at Court with some aspiring lawyer and vehemently protested. This was done on two occasions and finally they became so paranoid that entrance into their house for the purpose of examination of the boy, or to bring food and money, was refused. The climax came when the Government checks from Washington were discontinued and a bank appointed as a temporary conservator. When this occurred they were certain that treachery was afoot, and refused to cash the checks being sent from the bank. For a long time they refused, and it is known that often they went without food for days rather than cash a check, fearing that some evil would befall them should they do so. The mother is rather suspicious and evasive, allowing her prejudices to color what little judgment she has. The daughter has united with her in her ideas and is constantly swayed and stimulated to believe them. At present they have reached a stage where they constantly feed each other with these baseless ideas which both, in all their sincerity, feel are true. When an examiner attempts to converse with claimant, the collaterals keep up a continual conversation, talking excitedly back and forth in a rather wild and intense manner. They claim they have had the boy to various physicians who have prescribed abdominal belts for an enteroptosis, and so they attempt to show that his trouble is physical and not mental. They constantly ply questions of rather an absurd nature, explanations of which are at times a practical impossibility.

A mental examination of the claimant shows the following: Hair dishevelled, but clothes fairly tidy; oriented in all spheres, evidencing no clean-cut hallucinations, but many ideas of influence and reference; marked introversion especially as regards his stomach and wounds. In his attitude and behavior he is rather puerile and immature, constantly ascribes his hypochondriasis to frights received while being treated by various doctors; is content to remain at home, showing little interest in current events; spending the entire day sitting moodily in a chair talking over at times with his family the ruthless persecution of the Veterans' Bureau. Even neighbors are at times confided in and feel the story is plausible.

Comment—In this case we have a dementia praecox. Manifestations of his psychosis were not noted until one year after discharge from service, although it was learned that at the age of fourteen he suddenly changed in his demeanor and became quiet and rather seclusive. Undoubtedly this man had a predisposition and probably inherited this from his mother who has also developed a mild psychosis because of financial difficulties and her inability to adjust herself to the ways and means of the Bureau. The daughter has some of these tendencies, but is influenced in a large part by her mother who has managed to overcome her better judgment. Admitting that external influences can cause protoplasmic changes, and that the exigencies of war played a large part in the development of the trouble our claimant is having, we cannot escape the fact that the predisposition existed, and that this man might have developed a psychosis in later life when subjected to the ordinary stress and strain of earning a livelihood. In either case, the Government makes allowances, connects the entire condition as of service origin, and calls him permanently disabled. Unfortunately a snag is met. No one understands the case in its true light. They see only one side of the picture, namely, a family apparently starving, without help, and, on the other hand, an individual receiving money for very little disability, although the Government is compensating for disabilities incurred in service, many of which were apparently not of service origin. Up to date this man has received $5460.

CASE II

This case first came under our observation in 1919 shortly after discharge from service. Father died at fifty-five of tuberculosis; mother of carcinoma at fifty-two. Other than this the family history is indefinite and rather vague.

Past History: Born in Poland, thirty-two years ago, receiving little, if any, education, and working at an early age on a farm. In 1914 he comes to these shores seeking a livelihood and works rather irregularly at positions requiring little mental effort until two years prior to service when he worked as a laborer in an iron foundry, continuing in this capacity until his induction. During his military service he suffered from no serious illness, accidents, or operations,

with the exception of influenza at camp, and at no time was he ever subjected to combat.

Since discharge his career has been rather erratic. He has been in twenty-seven Government hospitals and at each institution was considered as an unreliable, mentally deficient and emotionally unstable individual. He has not performed any remunerative work since discharge, and even now is at another hospital. His chief complaint has been convulsive seizures with loss of consciousness. Observation has invariably brought forth a diagnosis of "Hysteria," although the possibility of epilepsy has been thoroughly considered.

His hospital changes have been explained by the abuse of alcohol, and lack of coöperation causing discharge from hospitals for disciplinary reasons.

Physically he is a fairly rugged appearing individual, showing the characteristics of his race, and at no time has there been found any evidence of pathology from an organic standpoint. Mentally he is rather restless, impatient, easily excited, impulsive, and subject to emotional outbursts which at once cause one to think of a spoiled child who is 95% emotional and 5% intellect. His seizures have been noted by many physicians at the Bureau, and have been described as typically hysterical there being no aura, clonic or tonic spasms, cyanosis, frothing at the mouth, or evacuation of bowel or bladder. A psychometric examination shows him to have a mental age of eight years with an intelligence quotient of fifty. He was graded on a group of performance tests because of his illiteracy. His responses were quite uniformally in keeping with the above rating which is probably a fair estimate of his level of ability. In the execution of the form board tests he depended largely on the trial and error method.

Comment—In this case we have an individual of inferior mental level with all the potentialities of developing a functional nervous disorder. Although he saw little, if any, real military service, he developed a neurosis, an attempt undoubtedly to escape the responsibilities of self-support, and now has become a burden which the Government will undoubtedly carry for some time to come. In his case I believe it is safe to say that military service, if it was a factor in the production of his nervous trouble, certainly played a minor part. In either case, he is given the benefiet of the doubt, and no money is spared to make him comfortable. He is even granted compensation. In other words, the Government has assumed the responsibility of an individual who would have been a State charge if it had not done so. Some may say he should be made to work, but he has a hysteria, and this certainly might aggravate it. If this man's case was disregarded, he would probably be found somewhere in the country following either a hysterical seizure or an episode of amnesia, and the criticism of the Bureau activities would be endless. This man's folder is eight inches thick and deals with records of his past poor conduct and absolute unreliability proving conclusively that he is of unstable neuro-mental make up and might have been no different if he had not gone to war.

CASE III

Born in South Weymouth of parents of moderate circumstances. Started school at the age of five, leaving at fifteen to go to work. As a child, was delicate and sickly and suffered with enuresis until the age of ten, also had measles, varicella, scarlatina, diphtheria and frequent attacks of tonsillitis. Admits that he was the easily irritated and excited type of boy, and that at the age of twenty he suffered with nervous exhaustion because he had been up night and day with a sick father. He states at this time that when on his way to a drug store in a car he fainted and later found himself in a doctor's office remembering nothing of what had happened. He claims that prior to service he worked steadily, and had no difficulty of any kind, owned a real estate business, and married at an early age.

During service he suffered no serious accidents, sustained no wounds of any kind, but complains that since discharge he has been nervous and tired, saying—"I am impatient and I cry. I am afraid something is going to happen. I have many things on my mind. I am restless at night and dream a great deal. I have dizzy spells in the morning. If I hear an automobile backfire, I jump at least two feet." This has been the character of his complaints almost continuously. During his mental examination his wife entered the examining room with him and offered a great deal of the information noted above. After she left the room, the claimant remaining, he admitted he had been drinking and taking large doses of triple-bromides, and also some alcohol on the morning prior to examination which he had obtained from a friend who had been recently married. Denied absolutely that he had been in the habit of taking liquor excessively, also that there was any marital discord or anything in his domestic relations that might be considered as a cause of his nervous trouble. The examiner felt suspicious at this time, but, in view of the fact that the wife had seemed earnest in telling her story, a diagnosis of "Anxiety Neurosis" was made, and a disability rating of 40% granted. In August, 1920, he was granted Federal Board Training, and a course in automobile mechanics was given him at Franklin Union. This, however, was of short duration since he could not survive the test and eventually was discontinued. He claims that this was on account of his nervous trouble.

On October 4, 1924, the wife of claimant came alone to the Bureau, and offered the following

information. She admitted that much of what had been mentioned in the folder was false, and she stated as follows:—She knew claimant for five years before he went into the service, and during that time he drank very heavily. This, however, was only periodical, and after getting over his "bouts" he would be fairly agreeable and for a while would work steadily, that is, if he wasn't discharged too soon. Previous to his entrance into service he got into many difficulties; no one would hire him; when finally he did get a position he was discharged in a short while because of his alcoholic habits. His induction into service saved him from growing steadily worse, and during the latter he got along fairly well. In defense of her false statements, she stated that she thought that perhaps he did have a nervous condition, and that compensation and training might be the means of getting him well. However, at present he is gradually growing worse, drinking alcohol, moonshine and Jamaica ginger, in fact anything that has any resemblance to pre-war liquor. Of late he has become abusive, disagreeable, aggressive and deceitful. In fact, he practices "all sorts of evils" to get a few dollars with which to buy liquor. He has become untidy in his personal appearance and habits, refuses to wash himself, go to work, or, in fact, to do anything. He recently accused her of being unfaithful, more especially before she was married to him. The diagnosis was then made of "Alcohol Deterioration," and he was admitted to the West Roxbury Hospital for observation.

Comment—This case shows another disadvantage under which we are laboring, and that is the question of veracity of claimants' statements. Undoubtedly many were influenced by what they could get with a minimum expenditure of energy this boy illustrating one of such cases. Social Service investigation is constantly being instituted, but even in this we are handicapped. Most natural it is that those nearest and dearest to claimant should confirm his statements when even those who are of no relation at all hesitate many times to condemn him, more especially if he has served in the World War. As a result we find this man receiving undue compensation and another reason for criticism. Often we find a claimant with a genuine disability of service origin—he comes to us for help—what is his mental attitude? Undoubtedly he misconstrues the purpose of the medical examiner and feels he is there primarily to prevent him from getting compensation. As a result, he inadvertently exaggerates his trouble, distorts the original complaint, and is rated as suffering from some functional nervous disorder, receiving less money than if he had told the truth. The thought of returning to civilian life, becoming self-reliant in the face of adverse economic conditions, makes many of these cases resistent to therapy. This man is at the present time being cared for at a Government Hospital, recuperating from his alcoholic libido.

CASES IV, V, AND VI

Charles, Paul and Leo are three brothers who have come to the Bureau claiming compensation for disabilities incurred in service. All were born in Massachusetts, and early developmental histories read as follows:—

Paul reached the third grade of school at the age of thirteen, worked as a peddler a great deal of the time prior to his entrance into service. Claims that when he was two weeks at Camp Dix, New Jersey, he was sent to a hospital for fourteen days for what reason he does not know. After discharge he came to Boston the next day, and while trying to find his way about the city suddenly became dizzy. He did not lose consciousness, and later reached his destination. Since then he has had these attacks very often; says that he becomes rather dizzy and shakes all over.

Mental examination shows the following: He is rather silly and childish in his attitude. He can do only the most simple arithmetic, and then with considerable difficulty and uncertainty. Psychometric examination shows him to have a mental age of 7 10/12 years with an intelligence quotient of 49. The results were consistent with this rating. He showed perfect motor coördination and poor judgment. He was slow to comprehend and to respond. There was marked limitation in his ability to handle even simple problems, and his attitude during the entire test was extremely childish. He was never rated as having any vocational handicap, and received no money from the Government.

Leo left school at the age of fourteen in the sixth grade. He had difficulty in learning, and at all times evidenced a tendency to wander over the country. He worked on a farm for three years, then in a lumber yard for two years, and for four or five years prior to entering service acted as a railroad brakeman. As a boy he was arrested several times for petty offenses. Was in the Navy for one year in 1914 and 1915; was sentenced to Deer Island for two months for fighting while in service. He was discharged in 1915 on a medical survey for flat feet. However, he was able to reënlist in 1917, and was later discharged on a survey for the same reason. He worked for four months, but was obliged to discontinue because of his health. He claims that since his last enlistment he has had severe gastro-intestinal pain occurring after meals and lasting about half an hour. He has been awakened many times at night by this pain which is in his epigastrium and is referred to his chest. His feet ache when he does much walking. He is exceedingly tired upon awakening in the morning. He lacks confidence in himself, and has difficulty in doing his work properly. He admits at the same time that he had

stomach trouble for many years prior to entrance into service.

Physical examination shows him to have pesplanus, chronic arthritis and pyorrhea. Mentally he is fairly quiet and coöperative; flow of thought relevant and coherent, evidencing a monotony in speech which is very noticeable. No hallucinations or delusions were elicited. He denied ideas of influence or persecution. He has a mental age of 11 2/12 years with an intelligence quotient of 70. He rated without irregularities. Memory tests were difficult for him, but he showed an ability to reason which was somewhat above his general level. No attention difficulty was apparent. His comprehension of abstract directions was less satisfactory than might be expected. This man's diagnosis was "Mental Deficiency with Neurasthenia" for which condition he was compensated from 1922 until November, 1924, receiving a 10% rating. At the last examination it was decided that his neurasthenia was not interfering with his ability to carry on, and he was developing a tendency to fall along the line of the least resistance. Compensation was, therefore, discontinued.

Charles spent only three years in school, he also had a rather erratic economic history prior to induction into service. During the latter while on a steamship in 1917 he was discovered to be unwell and was sent to a hospital and later discharged with a medical survey. A diagnosis of pulmonary tuberculosis was made, and although he was only in the Navy about seven weeks, it was considered as due to service, and he was accordingly compensated. He complained constantly of cough, pains in chest and back, and anorexia. He undoubtdly, in the opinion of the medical examiners, exaggerated to a great degree the pathology which did exist.

Mentally he was decidedly puerile; his general intelligence was rather inferior; he was unable to do third grade spelling or arithmetic. Judgment and insight were poor. Psychometric examination rated him 9 5/12 years with an intelligence quotient of 59. There was a question at this time as to whether or not he had had some familiarity with the tests in spite of the fact that he denied it vigorously. At any rate he showed a uniformally low grade reaction.

Comment—Social service investigation shows that both parents are considered in the community as being below par mentally. The father is the joke of the neighborhood, and has been nicknamed "Peanut Pete." However, they are law abiding citizens, and have never been known to get into difficulties. There are eleven children, the youngest sixteen years old in the seventh grade in grammar school. None of the children are married and they have never followed any one occupation, and do not live at home all the time, but go from city to city in pursuit of work and return home from time to time. The family is well known to the Red Cross and other welfare agencies in Lynn. Red Cross records show that they have been in Lynn for the past twenty-six years, and are well known to the police, although their father or mother have no record. One son was recently arrested for the theft of an automobile. The Boston Society for the Care of Girls is interested in the family, and three of the girls were considered a menace from a moral standpoint, and were in Waverley School for the Feeble-Minded for a time. One daughter has one illegitimate child. They are known to the Society for the Prevention of Cruelty to Children, who consider the family a hopeless one. They feel that the father and mother are well meaning enough, but that they had so many children that they were unable to properly take care of them. There is no history of drinking, although the Red Cross worker has seen Charles intoxicated.

These cases present another aspect of the problems, and illustrate the factor of inheritance and also the influence that mental deficiency plays in the exaggeration of truly existing physical incapabilities. These men are undoubtedly making the most of their difficulties and two are receiving money sufficiently adequate to compensate for their disabilities. Because they are of inferior mental make-up, those conditions which would be a minor handicap to those of normal mental horizon are to them major. They might appear to be without handicap and those not acquainted with the facts in the case might feel that they are receiving undue compensation, but they surely are handicapped to some degree, and are unable to do work requiring much use of mental faculties, more so than if they had never seen active service. Training proved a failure in one of these cases, and from our experience in the past, few suffering from mental deficiency who were ever in training were sufficiently benefitted to be declared rehabilitated or employable, employability being the test of training which is not instituted as a therapeutic measure alone, although it has incidentally proven to be such in many cases. The future disposition of these men is a question requiring due thought and deliberation. Financial aid will surely tend to develop in them an exaggeration of the tendency to be reliant on the help of others, and discontinuance of same will be certain to cause some deleterious results.

COMMENT

The question of compensation resolves itself into a matter of responsibility where the government rather than the state assumes the burden of care of disabled veterans. Despite criticism and constant opposition, either through popular clamor or legislation, this country has done far more than many foreign countries for veterans.

The United States allows for those who are temporarily totally disabled 100% or $80 per month plus an additional amount for depend-

ents. For those who have a definite vocational handicap interfering with the performance of pre-war work, training is instituted so that a man might be able to earn nearly as much with his disability at a new type of work as he would if he carried on in his old form of employment. Even after his training is terminated, then a man is allowed a rating commensurate with his handicap. During the period of training 100 dollars per month plus additional money for dependents is furnished besides expenses in the way of books, instruments, college fees, etc. Cases are at times given forty-eight months of training; the maximum allowed, and in many instances an extension of from 3 to 6 months granted if necessary for the future economic efficiency of the veteran. This means that in the above instance more than five thousand dollars was expended in an attempt to make up for disabilities presumably incurred during service.

Dr. Sims, Chief of the Neuro-Psychiatric Section at the Veterans' Bureau, District No. 1, in a study of 200 rehabilitated neuro-psychiatric claimants found the following:

1. Working at vocations for which they were trained	107
2. Working at vocations other than for which they were trained	38
3. Out of employment	43
4. Not working due to neuro-psychiatric condition	8
5. In hospitals	4

From the above we find that 53½% of this group were successfully rehabilitated in contrast to 19% who were not. This latter group includes those who were trained in an objective non-compatible with their mental status, and those who modified their illnesses for compensation purposes. The former individuals are few in number in comparison with those suffering from compensationitis.

The United States Government has done everything possible to aid the ex-service men. Where other countries have allowed $35 per month for a 100% disability, we have allowed $100 per month. Certain diseases involving the nervous and respiratory systems, even though they arose within five years from date of discharge from service, were held as compensable. Nervous conditions including such cases as acute encephalitis, combined system diseases such as multiple sclerosis, amyotrophic lateral sclerosis and progressive muscular atrophies of various types.

I feel that, although there has been much merited and unmerited criticism with regard to the activities of the Veterans' Bureau, the Government in the performance of such a stupendous task has done well.

GALL STONE ILEUS

BY GEORGE ALBERT MOORE, M.D., F.A.C.S., BROCKTON, MASS.

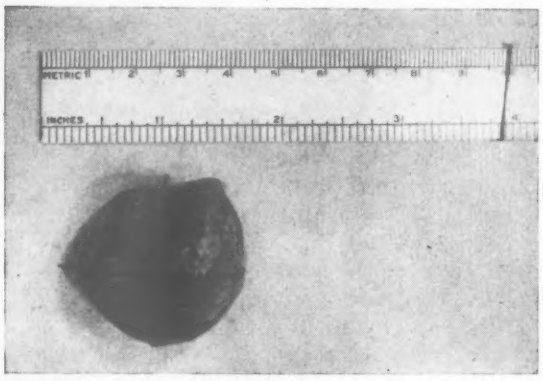
CASE 1. August 14, 1912. Woman 63, diabetic, abdominal pain for two weeks; vomiting five days. Cyanosis, distension, poor quality pulse. Operation: Brockton Hospital, Dr. Lawrence and Dr. Moore, median incision; gall stone size of a pullet's egg found in lower ileum. Enterotomy with removal of stone was performed, many adhesions were found about gall bladder. Death occurred eighteen hours after operation.

CASE 2. March 25, 1915. Woman 57, acute abdominal symptoms for four days. Vomiting, distension, no movement for six days, condition poor. Operation: Brockton Hospital, Dr. Burnett. Right rectus incision, large gall stone found in lower ileum. Enterotomy. Death occurred the following day.

CASE 3. May 15, 1921. Woman 67, abdominal pain for four days, more on left side, accompanied by vomiting; no movement since onset. Patient was in poor condition. Operation: Brockton Hospital, Dr. Barrett. Median incision above umbilicus, much bloody fluid found in abdomen. Gall stone size of a robin's egg found in lower ileum. Enterotomy. Gall bladder adherent to duodenum. Death occurred four days post operative.

CASE 4. December 17, 1923. Referred by Dr. W. P. Hutchinson of Abington. Woman 48, attacks of abdominal cramps accompanied by dysentery for twelve years. No indigestion, no "bilious" attacks, never jaundiced. In August, 1921, she was operated upon at the Massachusetts Homeopathic Hospital for uterine fibroids. During her convalescence she had attack of acute epigastric pain lasting three days. Since then she has been well except for ventral hernia. Six days ago she was seized with weakness and nausea, and vomited foul material the following day. She has been nauseated since, but did not vomit again till today, when she vomited several times. She has taken nothing but sips of water since onset. Bowels have not moved for five days. She had moderate abdominal pain five days ago but has had none since. Examination showed a fat, pale woman with large ventral hernia and marked distension. Vaginal and rectal examinations revealed nothing abnormal. Blood pressure 140-70. Urine normal. Temperature 99, pulse 100. White count 12,000. A diagnosis of intestinal obstruction was made, but it was deemed advisable to delay operation six or eight hours for a thorough preöperative preparation. An enema was given, two quarts of saline by

hypodermoclysis, morphine and external heat applied. About eight hours later her condition was much improved and she was operated upon at the Moore Hospital. Ether anaesthesia. Operation: Dr. Moore. Excision of scar, moderate distension was present, but no injected coils of small intestine were seen. Three feet from the ileo-caecal valve a gall stone about the size of a hen's egg was found. It could be moved



Gall stone from Case 4. Diameter, 1½ inches. Circumference, 3¾ inches.

back and forth within the intestine with ease, and the ileum below it was not collapsed, which probably accounted for the patient's condition. Enterotomy was done, removing the stone. Two more large stones were felt within the gall bladder which was adherent to the duodenum. Wound closed with repair of hernia. Patient made an uneventful recovery.

Gall stone ileus was observed in the autopsy room for many years before its recognition as an operable condition. It has doubtless been recognized in many unrecorded cases by the laity.

Martin[1] asserts that probably 50% of all gall stones which find their way into the intestine are passed spontaneously by rectum.

Courvoisier[2] reported 131 cases of intestinal obstruction by gall stones and stated that spontaneous cure resulted in 70 after passage of the stones per anum.

Bartholin[3] (quoted by Martin) reported in 1654 a case of a gall stone perforating the gall bladder and jejunum.

Guillaume[4] mentions the case of an eminent lady who was a political enemy of Napoleon's. After attending a banquet she was seized with abdominal pain, vomiting and collapse. Her friends were apprehensive of a political crime, but suspicion vanished when the lady made a rapid recovery after passing a large gall stone by rectum.

Courvoisier[5] stated that at the end of the eighteenth century there were reported nine cases of fistulae between the gall bladder and intestine and that three times as many cases of intestinal obstruction from gall stones were on record.

During the past ten years no writer has attempted to tabulate all reported cases. In 1914 Von Wagner[6] made a study of all available literature on the subject and found three hundred and thirty-four cases on record. Abbot & Hunt[7] stated in a paper read before the New England Surgical Society in 1922 that they had found but twenty-three cases reported in the preceding eight years. In the discussion which followed the presentation of their paper eight other cases were recorded. Probably a somewhat generous estimate of the number of reported cases in the past ten years would be less than seventy-five, making a total of all cases to date about four hundred.

In a compilation of two hundred and eighty consecutive cases of intestinal obstruction from all causes from the records of Johns Hopkins Hospital, Union Protestant Infirmary & St. Agnes Hospital of Baltimore in 1912, Martin[8] could find but one case caused by a gall stone. At the Massachusetts General Hospital during the twenty years prior to 1918, there were but two cases of gall stone ileus observed out of a total of two hundred and thirty-nine cases of intestinal obstruction from all causes.

Mayo-Robson[9] (quoted by Martin) reported that from four of the largest hospitals in Great Britain comprising an in-patient service of eighty thousand patients there were but four cases of intestinal obstruction from gall stones on record. In answer to inquiries made in 1912 by Martin, twenty-eight replies were received from prominent surgeons showing a total of sixteen cases of gall stone ileus which had been observed by them. Martin estimated that the combined practice of the twenty-eight surgeons totalled over five hundred thousand operations.

Hendricksen[10] stated in 1923 that thirty-two cases had been reported in Denmark in the past thirty-one years. This report is somewhat at variance with that of Moller[11], who in the same publication in 1913 stated that he had operated upon twenty-two cases with a mortality of 89%. If Moller's report is authentic, it is by far the largest series observed by one surgeon. The only other individual series of any considerable number is that of Schneitzler[12] of Vienna who had observed thirteen cases (reported by Von Wagner).

Courvoisier stated that about 4% of cases suffering from intestinal obstruction from all causes were due to gall stones. Statistics of recent years fail to confirm the above statement made nearly thirty-five years ago, possibly because more cases of intestinal obstruction are now recognized and operated upon. Statistics from a large number of hospitals are not on record, but from those reported, between 1 and 2% of all intestinal obstructions are due to gall stones.

Gall stones of sufficient size to produce intestinal obstruction may take many routes in their exit from the gall bladder to the intestinal canal. They may traverse the cystic and common ducts to the duodenum. According to recent literature there is a rather general belief that this route is rarely taken by a stone sufficiently large to obstruct the intestinal lumen. Probably a certain number of comparatively small stones pass the ducts and by accretion while in the intestinal canal attain a size which obstructs at some narrow portion of the ileum.

Naunyn[13] states that stones as large as a hazel nut can pass the ducts; but in only a very few instances in recent literature have stones of this size been reported as causing obstruction.

Murphy[14] in 1910, stated that in several instances gall stones had been observed causing intestinal obstruction, in which the common duct was found to be dilated to the size of the intestine or as large as the gall bladder. In these cases no other demonstrable route for the escape of the stone could be found. The two largest stones he reported were one which passed the common duct and caused obstruction measuring four inches in circumference and the other removed from the common duct measuring 1 7/8 in. in length by 1⅛ in. in diameter.

Courvoisier described four cases of obstruction in which the gall stone unquestionably entered the intestine by way of the bile ducts. No evidence of fistulae was found in these cases and the ducts were observed markedly dilated.

In cases where the stone traverse the ducts to the intestinal canal, jaundice is usually present at some time preceding obstruction, and should be of much value in diagnosis.

The other routes which a gall stone may take in reaching the gastro-intestinal tract are dependent upon the formation of fistulae between the gall bladder or ducts and some portion of the alimentary canal. Fistulae have been reported between the gall bladder and stomach, duodenum, jejunum, ileum and colon. They have also been observed between the common duct and duodenum and jejunum. The most common route for large stones to take is through a fistula between the gall bladder and duodenum.

Courvoisier reported thirty-six fatal cases, in twenty-five of which fistulae were found between the gall bladder and duodenum and in one a fistula was found between the gall bladder and colon. Murphy[15] mentions seventy cases in which the route taken by the stone was recorded; in thirty-six a gall bladder and duodenal fistula was found, in twenty-five a gall bladder ileum fistula, in one a colon fistula, in one a duodenal-colon fistula and in seven common duct-duodenal fistulae were observed.

Fistulae between the gall bladder and stomach are extremely rare; but cases are on record in which they have been found at operation following expulsion of gall stones in the vomitus.

According to Courvoisier and more recently confirmed by studies made by Von Schläpfer[16], the pathology of the formation of fistulae between the biliary and gastro-intestinal tracts begins with a cholecystitis resulting from gall stones. This is followed by ulceration and pericystitis with adhesions between the gall bladder or ducts and the duodenum. Perforation then occurs within the adhesions, the whole process often requiring years. In many cases abscesses have been observed between the adherent viscera.

I have observed at operation two cases of gall bladder duodenal fistulae in which the gall stones were found partly within the duodenum. One other case in my practice, of fistula between the gall bladder and duodenum, was unique. The patient had a perforating duodenal ulcer which had been closed by adhesions between the duodenum and gall bladder. The ulceration had continued through the wall of the gall bladder forming a fistula. No other pathology of the gall bladder was found.

The symptoms accompanying the formation of a fistula and escape of gall stones into the intestine are usually a vague and indefinite illness lasting for several months before obstruction occurs. Rarely is a definite, clear cut history of gall bladder disease obtained. It is of interest to note that accurate diagnosis of obstruction from gall stones is rarely made. Barnard (quoted by Gibbons[17]) made a correct diagnosis in one of three cases which he had observed. Moller[18] stated that of the twenty-two cases of gall stone ileus which he had operated upon, no history of preceding gall bladder disease was obtained in many cases and that a correct diagnosis before operation was made in but three patients.

Of seventy-three cases of gall bladder duodenal fistulae observed by Courvoisier, most of them on the autopsy table, ulceration still existed in twenty-six, the fistulae edges were cicatrized in twenty-seven, and in eight the fistulae were closed. He stated that they present a natural healing. Intestinal obstruction from gall stones had resulted in twenty-eight of the seventy-three cases.

Gall stones are prone to occur in women past middle life. Murphy stated that one out of every ten aged women who come to autopsy have gall stones. It naturally follows that gall stone ileus in the majority of cases is observed in debilitated women during or past the fifth decade of life. In many patients the onset of symptoms of acute obstruction is preceded by months or even years of indigestion.

Of the three hundred and thirty-four cases reported by Von Wagner[19], the sex was mentioned in two hundred and sixty-two; there were one hundred and nineteen women and seventy-one men.

The age was recorded in two hundred and

thirty of these patients: twenty-five to twenty-nine years, two cases; thirty to thirty-nine years, six cases; forty to forty-nine years, twenty-nine cases; fifty to fifty-nine years, seventy-three cases; sixty to sixty-nine years, eighty-two cases; seventy to seventy-nine years, thirty-four cases; eighty and over years, four cases.

The symptoms produced by the passage of one or more gall stones through the intestinal canal from their portal of entry to their portal of exit are dependent upon several factors:

1. The size of the stone or stones.
2. The level at which they enter the intestinal canal.
3. Abnormalities of the intestine.

It is obviously impossible to estimate the number of patients in whom gall stones, after having entered the intestine through the common duct, are passed with the feces without symptoms.

Martin stated that probably 50% of all cases in whom gall stones found their way into the intestines passed them spontaneously by rectum. One would be led to infer from his article that he had reference to gall stones which were large enough to give symptoms in their passage through the intestine.

When the passage of the stone interferes with the normal function of the intestines, symptoms are presented. The irritation resulting from the passage of a stone through the intestine may initiate gastro-intestinal symptoms varying from mild indigestion to acute colic with nausea and vomiting.

Diverticulae of the intestines have been found filled with gall stones and producing acute symptoms according to Murphy. Kinks and angulations of the intestine from adhesions may interfere with the passage of a stone. In one instance (cited by Courvoisier) gall stones were found imbedded in an early carcinoma of the bowel.

Large gall stones are prone to cause symptoms of varying degrees of severity in their passage through the intestine, though eventually many are passed spontaneously by rectum.

Fistulae between the gall bladder and colon are found in a small percentage of the cases under discussion. Murchison[20] reported nine of this type and Mosse[21] found a total of nineteen cases. Courvoisier recorded thirty-nine patients in whom this type of fistula had occurred. In twenty-seven evidence of gall stones were found in the biliary tract of intestine at autopsy. The passage of a stone through the large intestine rarely occasions symptoms, unless it is arrested at the anal orifice.

Practical application of the above fact has been made by a few surgeons, who have avoided enterotomy for obstructing stone by pushing it through the ileo-caecal valve and allowing the patient to pass the stone spontaneously.

The symptoms resulting from the passage of a large gall stone from its most common portal of entry, a gall bladder-duodenal fistula, through the small intestine are dependent in general upon "the comparative size of the passage and the passenger." The theory that spastic contraction of the wall of the intestine about the gall stone was the cause of obstruction has not gained general acceptance. The symptoms most frequently observed are indigestion of varying severity accompanied by chronic constipation or alternating attacks of constipation and diarrhea. The termination of these symptoms is by spontaneous passage of the stone or by the onset of the usual signs of acute obstruction. Probably many of the milder symptoms, aside from the irritation to the intestinal mucosa, are due to temporary arrest of the stone by kinks and angulations of the intestine, relieved by vigorous peristalsis. As the stone reaches the lower levels of the intestine where the lumen becomes narrowed, passage becomes more and more difficult till complete arrest finally takes place.

Jones[22] stated that in one case which he had observed the stone passed through the intestine in thirty hours; in another it required twenty-eight days. Von Wortmann[23] cited a case of a woman of sixty-five in whom the history showed that the stone has been in the intestine about a year.

Acute symptoms are usually gradual in onset. They are similar to those of obstruction from other causes, but are often much less severe. This is due to the fact that gall stone obstruction is practically without exception an obturation and not a strangulation as is seen in many other types of obstruction.

In a study of the sites of obstruction in fifty-two cases Courvoisier found four in the duodenum, four in the jejunum, forty in the ileum, two in the appendix and two in the large intestine.

Summary of characteristic symptoms: A woman, past middle life, rarely giving a history of acute disease in the right upper quadrant, but often of indigestion followed by alternating attacks of chronic constipation and diarrhea. Finally mild attacks of obstruction occur, relieved spontaneously or by the use of laxatives, which eventually terminate in acute intestinal obstruction. The final attack is gradual in onset, gas is passed during the early stages followed by complete obstruction and accompanied by nausea, vomiting and recurring attacks of colicky pain. In rare instances the stone is felt through the abdominal wall or by vagina.

The treatment of gall stone ileus does not differ from that of acute intestinal obstruction from other causes, except that in the majority of cases we are dealing with patients that are extremely poor surgical risks. Few surgeons see sufficient cases to speak authoritatively on the subject or to be able to make a correct diagnosis before operation. The obstruction, a mechanical condition, must be "relieved by

mechanical means." In most instances the stone is found in the lower ileum; and if the diagnosis is made or the site of obstruction determined before operation, the incision should be over the lower right rectus.

The method of relief of the obstruction must be determined by the individual case. In most instances an enterotomy has been done and the stone removed. In a very few the stone has been pushed through the ileo-caecal valve or been crushed within the small intestine. If a facetted stone is found, search should be made for other stones. Cases are on record of finding a facetted stone at operation and at autopsy other stones causing obstruction being found at higher levels in the intestine. If enterotomy is decided upon, the stone should be pushed up to a higher level and the incision made through uninjured wall of the intestine.

The prognosis in most cases of gall stone ileus is bad. They are in most instances debilitated old women, seen by the surgeon in the late, toxaemic stages of the disease. Mechanical relief of the obstruction is simple but combatting the toxaemia is often hopeless. Murphy aptly said that many patients with intestinal obstruction die relieved of their obstruction.

Mortality statistics by different authors vary from 50 to 100%. Naunyn reported 92%, Schuller (cited by Martin) 56%, Moller 82%, Martin 69%. Probably a careful complication of all available cases would show a mortality of over 75%.

The old, hackneyed, expression that early operation would reduce these figures is but an attempt to shift responsibility to the general practitioner. It offers nothing toward a solution of the problem.

Improvement in operative technic offers little toward lowering the death rate. A few patients probably die as a result of too much surgery or too much anaesthetic. The great majority however die because they are referred to the surgeon too late; when therapeutics are of no avail after the obstruction is relieved.

The two fields which offer hope in the solution of the problem are: 1. Eradication from our text books and literature of the so-called "classical symptoms," (fecal vomiting, visible peristalsis or distention) the inoperable stage, as a requisite to the diagnosis of intestinal obstruction; and substituting the early symptoms, abdominal pain, vomiting and constipation. 2. Better methods of preöperative and post operative treatment which will have a specific effect upon the toxaemia.

NOTE: Cases 1, 2 and 3 were operated at the Brockton Hospital. I wish to express my appreciation to Drs. Lawrence, Burnett and Barrett for these reports.

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THE TREATMENT OF SCOLIOSIS

BY CHARLES E. AYERS, M.D.

[From the Scoliosis Clinic of Memorial Hospital, Worcester, Mass.]

PRELIMINARY REPORT

ABOUT one year ago the Memorial Hospital opened a clinic for the study and treatment of scoliosis in an attempt to organize some definite method of treatment which would produce lasting and satisfactory results.

The history of scoliosis goes back to the time of Hippocrates, who named and described the deformity. No treatment, however, was suggested until 2000 years later when Ambrose Paré suggested the padded iron corset.

Later, in 1741, André described the deformity more fully and condemned high heels and bad sitting positions as the cause.

The advent of the plaster jacket in 1854 by Dr. Sayre renewed the enthusiasm in the treatment of this condition, but the profession soon

found itself divided into two groups, one advising corrective and retentive apparatus, and the other believing in gymnastics and exercises.

A long period of indifference followed until 1911 when Abbott, of Portland, Maine, announced an entirely different principle, embodying as its main features flexion of spine and pressure by pads.

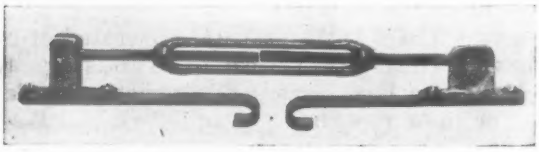

FIG. 1. Turnbuckle, showing hole for adjusting to greater widths.

The method which has been found most suitable for correction is the wedging cast with turnbuckle. A plaster jacket is applied under traction and a strap hinge is incorporated in the cast over the convexity; the cast is then cut at the level of the greatest deformity and turnbuckle attached on the concave side with a few extra turns of plaster bandage. The

FIG. 2. Wedging Jacket with turnbuckle in position.

patient is instructed to give the turnbuckle a turn daily until the full width of the turnbuckle is attained. Additional widths can be had by adjusting posts into holes which have been drilled in the metal hooks.

This treatment caused the profession to devote more consideration to this serious deformity and although the results by the Abbott method were somewhat disappointing in the severe cases, marked improvement could be demonstrated in the moderate deformities.

The objections that arose were, first, the deformed attitude of patient, making it difficult to continue the treatment for long periods unless patient was confined in the hospital, and secondly, the excessive weight of the cast necessitated by the numerous windows which were cut in the plaster, and in a great many cases large pressure sores were formed by the corrective pads.

The question of correction always brings us back to the fundamental principle of the cause of the deformity and if the correction attained can be held.

The etiology will not be discussed at this time but from the cases which have been examined at this clinic they seem to fall into three classes in the frequency named.

1. Infantile Paralysis.
2. Congenital malformation of the spine.
3. Rachitis.

It would be difficult to argue that deformities arising from these causes having been improved, that such correction could be maintained without some method of fixation. The method which seems most appropriate is the Fusion Operation as described by Dr. Russell Hibbs.

All cases under treatment are given exercises and instructions in deep breathing and it is very gratifying to follow their improvement in general health while under treatment.

The deformity and changes are recorded by X-rays and for convenience in handling, tracings are made. The jackets are renewed every four to six weeks and when the improvement is satisfactory or remains stationary the fusion operation is performed.

Case I—Female. Age 12.

No definite history of onset of deformity or cause found. Poor posture recognized by school physician.

Fig. a shows tracing of X-ray showing double curve.
Fig. b shows correction of lower curve by application of wedge in lumbar region. It will also be seen that dorsal curve has been increased by this procedure.
Fig. c shows partial correction of both curves by inserting a double wedge on opposite sides of cast. It was then decided to correct the dorsal curve as the primary.
Fig. d shows the correction. Fusion operation was performed in the dorsal region. Case still under treatment.

Case II—Male. Age 15.

Infantile Paralysis at 6 years. Deformity of spine noticed when child began to recover.

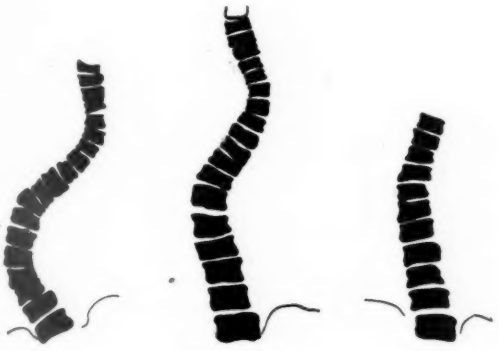

Fig. a shows severe lumbar curve.
Fig. b shows correction obtained in six months' treatment.
Fig. c shows practically full correction three months later.

Case III—Female. 14 years.

Indefinite history of Infantile Paralysis at eighteen months. Curvature of spine noticed shortly after.

Fig. a shows severe deformity. There was marked angulation of ribs and evidence of respiratory embarrassment.
Fig. b shows improvement after three months' treatment.

Case IV—Female. Age 12 years.

Deformity followed short illness suggestive of Infantile Paralysis.

Fig. a shows severe deformity. This case showed marked angulation of ribs and evidence of respiratory embarrassment.
Fig. b. Correction obtained after five months' treatment.

Case V—Male. Age 14 years.

Curvature noticed at 11 years. No cause known.

Fig. a shows high dorsal curve.
Fig. b. After six months' treatment no change in deformity. Fusion operation was performed.

Case VI—Female. Age 11 years.

Deformity of spine since two years of age. Rachitis probable cause.

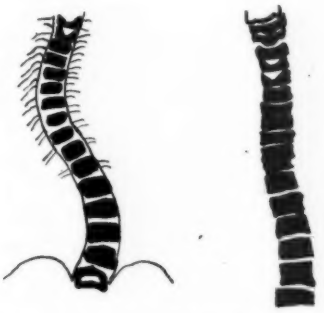

Fig. a. Tracing of original condition.
Fig. b. Correction attained in three months.

Case VII—Female. Age 17 years.

Curvature noticed two years ago. History suggestive of mild Infantile Paralysis.

Fig. a. Tracing of original deformity.
Fig. b. Correction obtained in three months' treatment.
Fig. c. Correction maintained after operation.

1. It is apparent from these cases that definite improvement is possible in all types of scoliosis except the high dorsal deformities.
2. The improvement in general health and

relief from pain appears to accompany the correction of the deformity.

3. Definite improvement can be demonstrated even in the very severe deformities.

This clinic is now receiving financial aid from the Kiwanis Club of Worcester and through their kindly interest and support further investigations are made possible.

NEW ENGLAND PEDIATRIC SOCIETY

DEVELOPMENTAL DIAGNOSIS IN INFANCY*

BY ARNOLD GESELL, M. D.

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WHAT is the general relation between Developmental Diagnosis and Pediatrics? Ordinarily, Pediatrics is defined as that branch of medicine which deals with the diseases of children. This is the etymological, the historical, and the basic meaning of the term.

The concept of disease, however, is broad, elastic, and changing. It does not very well stand alone. Coördinate with and interlocked with the concept of disease, is the concept of development. Disease and defect are conditioned in all sorts of ways by the factor of age or the factor of growth. The child, at least, is always growing and at every level he is both a product and a prophecy of growth. To interpret health and disease in terms of the child's growth is, therefore, a fundamental task of pediatrics.

The scientific importance and the practical significance of these varied problems of postnatal development are such that we can scarcely wait for the embryologist to solve them. He still confines his studies largely to the intrauterine period, and to morphological phenomena. To Developmental Pediatrics fall the manifold but interrelated problems of child development from the standpoint of medical diagnosis, prevention and control. Development quite as much as disease falls within the science and the practice of medicine.

Development is a word to conjure with and it has of course been conjured with by philosophers from the ancient Heraclitus to Bergson. There is always a danger that the term may be used in a mystical or vitalistic manner which will make it medically worthless. But not necessarily so.

Development is, after all, something concrete and tangible. Whatever else it may be, it is at least a lawful sequence of stages through which an organ or an organism attains maturity. Defined in this way, development becomes a durable scientific problem, quite as concrete (so suggests Adami) as the secretory process of a gland. Indeed in their ultimate scientific formulation there may be an underlying identity between the processes of glandular secretion and of developmental maturation. Both are processes which can be studied genetically.

Development, to be sure, is the most intricate, the most baffling of all processes; but it is not, therefore, unique and apart from all other life phenomena. It is essentially lawful; and because lawful it is within limits, predictable. In spite of the variety and the complexity of its manifestations it is neither so elusive nor so capricious as to fall outside of the scope of medical diagnosis and prognosis.

There are three major fields in which the development of the post-natal individual is manifested: (1) the physical, (2) the physiological, (3) the psychological. All of these fields are open to scientific observation, and potentially to developmental diagnosis. For the most part, however, the technique and the criteria of developmental diagnosis are unknown and wait for future research.

1. In the first field the manifestations of development are essentially *anatomical,* embracing height, weight, bulk, structure, topography, contour. Every organ or system has its lawful changes in absolute size, relative size, histological texture, which bear some significant and therefore diagnostic relation to the maturing of the individual. In his study of the ossification of the carpal bones, Rotch opened up the vast subject of anatomical age and the anatomical indicators of developmental status.

2. In the second field the indicators of individual development are of a biochemical or physiological character. Changes in substance metabolism, energy metabolism, changes in the composition of body fluids, in endocrine activity, and in the vegetative system,—these also bear a lawful relation to developmental conditions. When such phenomena can be studied with discriminating refinement, our methods will determine physiological age and become part of the technique of developmental diagnosis.

3. Finally there are the developmental phenomena in the higher sphere of sensori-motor function, habit formation, symbolic thinking and social adjustment. This is the psychological sphere, grafted upon the lower. In the present

*Read in part at the ninetieth meeting of the New England Pediatric Society, Boston, March 13, 1925.

context we shall not, however, insist on drawing too sharp a line between the physiological and the psychological. From a diagnostic point of view it would be futile to seek for an incontestible criterion of consciousness in early infancy. We need not raise controversial issues concerning the nature and significance of consciousness. From the standpoint of developmental diagnosis we are primarily interested in all those forms of behavior, mediated by a nervous system which are coherently related to the attained maturity of that nervous system. We may conceive such behavior as being a functional index of developmental status. An infant is as old as his behavior.

In this sense the mind becomes an observable object within the scope of developmental diagnosis.

For several years we have been attempting at the Yale Psycho-Clinic to determine behavior norms of infancy, and to define diagnostic procedures which might enable us to make objective estimates of developmental status in early life. Briefly our investigation has been as follows.

Ten levels of development covering the preschool period from birth to the sixth year were studied. As the embryologist cuts his specimens by serial sections to determine the lines of growth; so we have taken a series of cross sectional views of individual capacity and behavior at ten ascending levels,—1, 4, 6, 9, 12, and 18 months; and 2, 3, 4, and 5 years. The total investigation embraced some five hundred normal children,—50 at each level. These children were examined at our psycho-clinic, at infant welfare and health centers, and in their homes. The children were precisely at age.

The method of approach throughout the investigation was of an observational, clinical, natural history type. Appropriate test situations were devised to bring out characteristic capacity and behavior at each age level. The psychological examination of the subject was supplemented by an analytic interview with the parent. The purpose of the whole inquiry was to formulate concrete behavior items both characteristic and distinctive of the various age groups.

These behavior items are objective and recordable. They relate to motor control, language, adaptive (or intelligent) behavior, and personal and social behavior. The whole array of items, over 150 in number, has been codified into a set of ten developmental schedules, one for each age level studied.

By means of these schedules it is possible to make a somewhat detailed descriptive and analytic record of the developmental status of a child in terms of capacity and behavior. Purely numerical formulations are avoided. A premium is placed upon descriptive, interpretive diagnosis, and the importance of a unifying comparative approach is emphasized.

In connection with the investigation numerous action photographs were taken both of normal and of clinical subjects. (Specimens of these were shown by stereopticon.)*

The most obvious field of application for the normative data and diagnostic procedures above outlined, lies in the early recognition of mental deficiency. Although nearly all cases of mental deficiency are still beyond medical relief, we must go on the assumption that early diagnosis will lead at least to better educational management. Even in the field of mental defect and deficiency we must place a medical premium upon early diagnosis.

But apart from mental deficiency, methods of developmental diagnosis may be utilized to hasten the discovery and control of significant conduct disorders. Timely recognition in this vast field of faulty behavior is the basis of preventive mental hygiene.

The importance of surrounding child adoption and the placement of dependent children with adequate clinical safeguards indicates another field for more systematic developmental diagnosis.

From the standpoint of medical research it is also desirable that more accurate observations should be made concerning the course and the symptoms of development in various diseases. The developmental history of hospital and dispensary case records is ordinarily very scanty and incomplete.

Among the infant cases which come to autopsy there are many who should receive the careful investigation of the neuropathologist. But again the significance of his findings hinges in no small measure on the detail of the antecedent developmental diagnosis. The behavior picture and the histological picture must be brought into correlation.

We need to learn vastly more regarding the developmental back strokes and sequelae of disease in the living subject. We can only learn this by making more consistent and recurrent records of the developmental status of all cases which are under careful medical observation.

We may also be certain that a more scientific regard for the behavior correlatives of certain diseases will yield some new facts concerning premonitory symptoms of those diseases. For behavior is not only an evidence of developmental status; it is a sensitive index of well being.

Fundamentally, therefore, the behavior expressions of growth must be related to the morphological and the physiological conditions of

*The norms of development and their diagnostic applications are described in the author's volume: "The Mental Growth of the Preschool Child." A Psychological Outline of Normal Development, including a System of Developmental Diagnosis. Macmillan Co., New York, 1925. 447 pp.

health and disease. Development is a unifying concept which makes no artificial distinctions between mind and body, and which permits us to study the defects and the deviations of infancy in terms of the normal.

The pediatrist has already adopted this point of view in relation to the basic problem of nutrition. The supervision of nutrition in infancy has become the central concern of pediatrics, and here the pediatrist maintains a balanced interest in disease and in normal development. His attitude and his technique in this field constitute perhaps the most significant advance which has been made in preventive medicine.

The problem of nutrition is so fundamental that by implication and often by actual exigencies it includes the psychological and the functional aspects of development. The protection of the nutritional health of the child thus becomes the natural stage for a broader and equally continuous type of developmental supervision.

Recent movements, alike in the field of education and of public health, indicate an increasing recognition of the importance of the first years of life. The total developmental welfare of the infant is the foundation of child hygiene. The pediatrist holds the key position in the scheme of things.

CHILDREN'S PERSONALITY AND BEHAVIOR*

BY E. STANLEY ABBOT, M. D., BOSTON

I.

PEDIATRICS became a specialty because it was found that the infant's and the child's *body* and bodily processes were different from those of the adult.

Pediatricians have learned that there are *bodily, individual differences* between infants and children of the same age.

Similarly, the child *mind* differs from the adult mind in its structure and its working; and there are individual *mental* differences between children of the same age.

Dr. Gesell has shown beautifully the kind of behavior which, in the face of carefully standardized situations, we may expect from normal infants and little children at certain definite ages, and the progressive development of certain of their behavior reactions. What I shall say will be supplementary to what he has shown and told you.

II.

The new-born infant is, or is going to become, a *person*, with his own individual make-up, tendencies, capacities, peculiarities, character, different from any other. When does this differentiation begin?

Dr. Gesell has shown the *likenesses* of behavior at the age of one month, four months, six months, nine months, etc.; mothers of two or more children will tell you of *differences*, some manifested as early as the first month, in their children. One child may be placid, another excitable, one persistent, another giving up easily, one jolly and sociable, another sober and retiring, and so on. Some of these traits and tendencies are probably hereditary, may be modifiable to some extent, but persist, as tendencies at least, throughout life. Certain mental attitudes, not hereditary, may be acquired very early, even in the nursing period, and also persist for years or for life; as in a case of self-assertion and antagonism to parents, beginning in the first year. Such traits, tendencies, and attitudes, plus the behavior tendencies shown by Dr. Gesell, and others developed still later, make up the personality.

One of the most important traits we have, our *feeling* of personality, *amour propre*, sense of the dignity of ourselves as persons, those feelings which are hurt by ridicule, by being placed in an inferior position, by being belittled in the eyes of others, is unquestionably fairly well developed by the age of two years, and may possibly begin as early as nine months. It is important because it motivates much of our conduct; it underlies many of our attitudes and our conformity to custom and public opinion; too frequent wounding of it may give rise to feelings of inferiority, lack of self-confidence, shyness, and other handicapping results. Hence, in all our relations with children we should consider and respect their sense of personality, their "feelings."

The term "sense of personality" is sometimes used with a different meaning, namely, that of feeling one's self to be a different thing from other things. The new-born babe probably does not distinguish itself from the not-self, but probably begins to make the differentiation very early,—before it begins to feel the sense of personality in the meaning first described.

III.

From birth onward, everything that affects us at all, makes an *impression* on us, which is more or less permanent. Furthermore, to everything that affects us we *must* react. To many things, especially persons and their behavior to us, a part of this reaction is affective, emotional. Even the infant of a very few months is sensitive to the personalities, attitudes, and behavior of the parents or strangers. These emotional re-

*Outline of paper read at the ninetieth meeting of the New England Pediatric Society, March 13, 1925.

actions, the feelings which are aroused, largely determine behavior.

So important are they that Dr. Gesell had to be very careful, and make sure that his collaborators were equally careful, of *their* behavior in order that they might not arouse in the infants and children they were studying, such emotional or affective reactions, such feelings, as would modify or interfere with the performance of the set tasks. They had to avoid or allay fear, encourage confidence, for example, in order to get the desired behavior.

What children feel and *how strongly* they feel in response to the things that are said to them, or to the way they are treated, may determine, not only their immediate reaction, but some of their attitudes throughout life. Tricking or rough handling of a two or three year old child who is timid or obstinate by a hurried physician who wants to examine the throat, may be the seed of a distrust and dislike of physicians, hospitals and medicine twenty, thirty, or forty years later.

IV.

The thoughts, memories, feelings, wishes, etc., aroused by the experiences of the child are *internal* reactions. As reactions, they are behavior. But the term behavior usually signifies the *external* manifestation, which can be observed by others.

This external behavior, or reaction to the situation, is an *end result* of a series of mental reactions. It is a long series in point of number, variety, and complexity of components, but short in point of time. Behavior can be understood and wisely handled only in relation to these components.

Dr. Thom reports (*Mental Hygiene*, July, 1922, p. 468) the case of a girl of two, brought to his Habit Clinic because of repeated vicious attacks, getting to be dangerous, on her four-year old sister. Investigation showed that the father had noticed that when he petted the elder, the little one showed rather unusual and, to him, amusing reactions. For six months he had been amusing himself in this way. He was arousing in her *feelings* of jealousy and *wishes* to get rid of that which distressed her. With her two-year old mind she could devise no better way than the one she adopted. All that was obvious to the parents was the outward behavior; but that was the end result of the inner thoughts and feelings and wishes that cannot be seen, only inferred. From the adult point of view and the social point of view the behavior was bad. But she needed, not punishment, but freedom from that kind of stimulus or a better way of reacting to it internally. When her father stopped teasing her in the way he had been doing, she got over her tendency to attack her sister. Another child would probably have reacted differently to the teasing, on account of difference in personality, hereditary and social background, and experiences.

Some impressions made and feelings aroused in childhood years persist throughout life. A little girl of six, growing up in an austere religious atmosphere, was made to feel that she was dishonest and wicked if she took without permission things that did not belong to her. One day she surreptitiously took three grapes from the fruit dish; she had not asked permission, and she never confessed. She is now 86, but she never has been able to overcome the sense of guilt that has haunted her for four score years. It has influenced many acts of her life during that long period.

By *our* attitude and behavior toward children, we can largely determine *their* attitudes and behavior, not only for the immediate occasion, but in some respects for all their lives. Adults have in their keeping these little personalities, more sensitive and receptive than their own, who are trying to adapt themselves to this complex world. If children make some maladjustments, the task of the adult is to try to see the world through their eyes, and help them to better adjustments rather than to be unduly, perhaps unjustly, severe with them for having misbehaved, i. e., made poor adjustments. Such treatment as will help them maintain and preserve their own self-respect is most likely to be not only of immediate value, but of lasting value to them.

TRAINING FOR NURSES IN TURKEY

SIGNIFICANT of germination of the seed broadcast in war time is the announcement in a recent issue of the *Bulletin* of the Turkish Red Crescent relative to a new school for nurses. The school has been opened and training of nurses is under way. Its director is Dr. Omer Loutfi Bey, long prominent in the activities of the Red Crescent. The managing committee has as its head Prof. Bessim Omer Pasha, who is vice president of the Red Crescent. Two women, Mrs. Nezieh Hanoum, who is general secretary of the society's women's section, and Mrs. Safie Hussein Hanoum are members of this committee. In establishing the school, it was the privilege of the American Red Cross to give assistance by furnishing a collection of publications on the conduct of nursing education. Mrs. Mary K. Nelson, Red Cross Nurse, and director of the American Hospital and School of Nursing at Constantinople, was also consulted relative to the plans for the new school.—*Red Cross Courier.*

WHERE there is darkness there is dirt and where there is dirt, there is disease, probably more tritely expressed in the old Italian proverb "Where the light goes out the doctor comes in."—*Industrial Hygiene Bulletin, May, 1925.*

Case Records of the Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

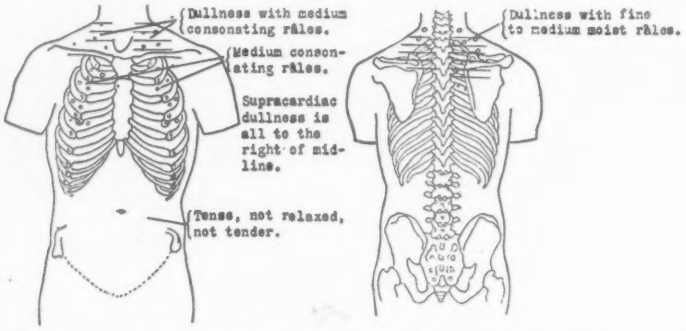
CASE 11221

MEDICAL DEPARTMENT

An American stenographer of twenty-one entered January 31 for treatment of abscessed teeth. She complained also of fever of two months' duration. Her grandmother died of tuberculosis; the patient was not exposed. The past history showed nothing of significance.

Six months before admission she went on a vacation, feeling tired and not equal to doing her work well. She spent much of the two weeks' vacation out of doors and returned feeling much better. She was then given more work than usual to do and in a few weeks began to feel easily tired again and to look run down. Three months before admission her catamenia ceased. Two months before admission her left hip began to hurt a little when she walked and was slightly tender on deep pressure. Four days after the onset of this the pain became so severe that she was obliged to give up work and went to bed for two weeks. The pain was always absent when she was quiet, but was so severe that she could not turn on her side at all. Her physician found she had fever. She said this was higher at night. She began to have cough with scanty sputum. After two weeks she went home. Three weeks later after massage she felt better and was allowed to be up and about, though she still had fever and cough. Since that time she had had no pain in the hip, but needed help in walking because of weakness. For three weeks she had been short of breath on exertion. January 28 she began to have double blurred vision after reading a short time and throbbing occipital headache, worse in the afternoon. For two months she had had a pustular infection of the right thumb, now nearly healed. Her bowels had been constipated for two months. She thought she had lost fifteen or twenty pounds during the past six months.

Examination showed an emaciated girl with bright eyes and flushed cheeks, quite dyspneic. The teeth and thyroid are checked as abnormal but not described. The tonsils were hidden. Small right posterior cervical glands were palpable. The spine showed little or no flexibility. The right side of the chest was smaller than the left and did not expand so much. The apex impulse of the heart was felt in the fifth interspace 8½ cm. from the midsternal line, 1 cm. outside the midclavicular line. The heart showed no other abnormalities. The blood pressure was 110/60 to 100/72. The

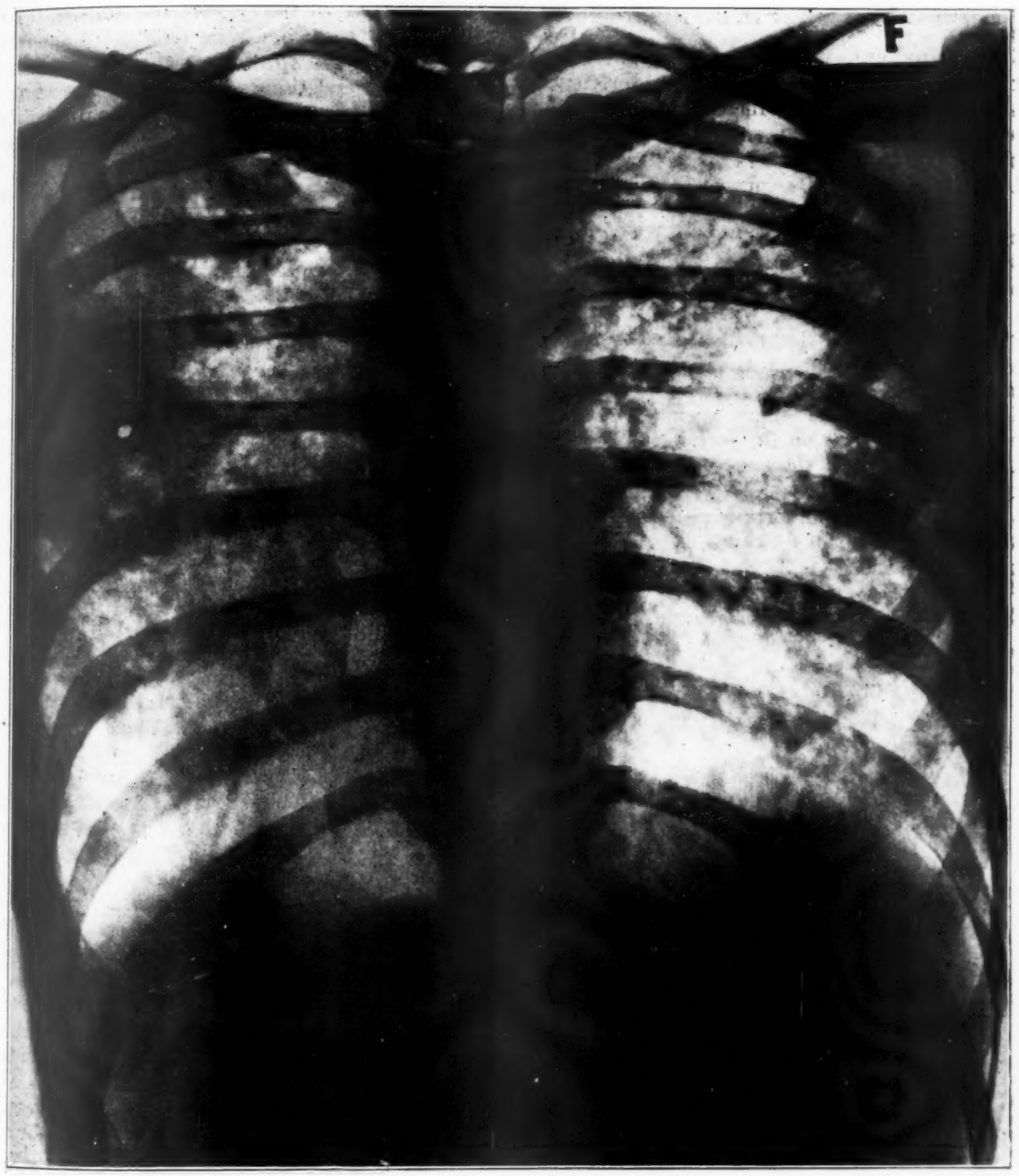

Dullness with medium consonating râles.
Medium consonating râles.
Supracardiac dullness is all to the right of midline.
Tense, not relaxed, not tender.
Dullness with fine to medium moist râles.

lung signs were as shown in the diagram. The abdomen was tense, not relaxed. Vaginal examination was not done. The fingers of the left hand showed moderate tremor. On the right thumb there was a small indolent ulcer with some dull reddening in its region. There was pseudoclonus of both ankles, more on the left. The other reflexes were normal, including the pupillary reactions.

The temperature was 100° to 104°, the pulse 100 to 140, the respiration 32 to 56. The urine was normal in amount, the specific gravity 1.018 to 1.025, a very slight trace of albumin at one of two examinations, 10 to 20 leucocytes at both (no catheter specimen). The hemoglobin was 70 to 65 per cent., the leucocytes 10,000 to 31,000, the reds 4,080,000 to 4,000,000, with occasional polychromatophilia. A Wassermann and a blood culture were negative. The stools were negative. No sputum was obtained. X-ray showed no definite evidence of disease of the bones of the spine and the pelvis or in the joint surfaces. There was rather diffuse mottled density throughout the entire right chest and the greater part of the left. (See illustration.) In the left side in the region of the midchest was an area of increased density in which there was complete absence of lung markings.

February 3 the visiting physician noted "I can find no evidence of sepsis or of chronic bac-

terial endocarditis. . . . . I can make out no bronchial gland enlargement. The semilunar space is completely obliterated by the left lobe of the liver. Scaphoid belly prevents spleen palpation. There is no fluid." There was no



Shows rather diffuse mottled density throughout the entire right chest and the greater part of the left. In the left side in the region of the midchest is an area of increased density in which there is complete absence of lung markings.

choking of the discs and there were no neurological signs. February 9 the patient died.

Discussion

by dr. richard c. cabot

notes on the history

I would call attention to the evolution of symptoms here, which is very interesting. We have a whole series of symptoms before there is any cough.

Her headaches were worse in the afternoon presumably because she had some fever at that time.

I am influenced in my thoughts about this history of course by the diagrams which I see dimly at the foot of the page; they certainly suggest that this history leads up to tuberculosis. I think even if I had not seen those diagrams I should have had the same suspicion. If we go back over the history to see what can be taken as evidence of early tuberculosis we have in the first place fatigue; we have next the cessa-

tion of catamenia, and then pain in the hip which we have not yet accounted for, then fever and then cough, later dyspnea, headache, constipation, and loss of weight. That is a very typical history.

NOTES ON THE PHYSICAL EXAMINATION

1. This patient, it is to be remembered, is twenty-one. If we are examining elderly people, after sixty for instance, we often find spines which are normal and which yet show no flexibility. But a person of twenty-one ought to have a flexible spine. That she has not does not prove bony disease, though of course we are thinking of that. It might be due to other causes. But it is not normal to have an inflexible spine at twenty-one.

2. I should think that with this amount of enlargement and no other signs discoverable we should not be warranted in saying that the heart really is enlarged.

3. In the diagram there seems to be no supracardiac dullness on the left, as if the lung in that position was blown up, covering the dullness of the great vessels.

4. These signs were certainly intended to be the signs of tuberculosis, and as stated they certainly seem like it.

5. It is rather strange that there should be tremor in one hand and not in the other.

6. This "pseudo-clonus" means when the toes are forced up towards the shin the ankle will go back and forth three or four times and then stop,—a perfectly normal phenomenon not meaning any disease of the cord.

7. We notice the relatively high pulse in relation to the amount of temperature. The fever practically did not go below 101°. It did go down to 100° once, but it is fair to state that it is essentially 101° to 104°. The pulse is seldom below 120. The respiration is continuously high, averaging 40 to 50; very striking changes in all three.

8. In the checking up of examinations by auscultation and percussion with X-ray findings the X-ray almost always shows more trouble, never less. I do not think so far that the X-ray has often served me in finding a trouble which could not be found at all in any other way. It is particularly for telling us how much the trouble is, how far it goes, rather than that it exists, that I have found value in the X-ray.

9. This is a very beautiful plate. We seldom see a better. It shows beyond any reasonable doubt a miliary pulmonary tuberculosis, which only the X-ray can recognize. It extends throughout both lungs and is not much more in the top than at the bottom.

10. There is no fluid, I take it, either in the chest or in the abdomen.

11. With such a miliary process as this in the lungs it would be quite natural to have something in the brain, but apparently there was no evidence of it.

DIFFERENTIAL DIAGNOSIS

To me the most striking thing about the case is the fact that we never got any sputum. Miss Painter says the record especially mentions that they could not get sputum. So with the X-ray plate in hand and the description we have read, I think it is very interesting and valuable to know that a process can have gone as far as that with no sputum.

Of course this makes us review once more our series of events. How do we know it is tuberculosis? We know it is a diffuse mottled process peppered through both lungs. Could it be some form of bronchopneumonia, non-tuberculous? I should say not. I have never seen any such diffuse process. Though we do have such things as chronic bronchopneumonia, they are not so widespread.

I have seen a plate that looked like this from pneumonokoniosis or the effects of steel or stone dust in the lung. But we have no reason to think of that. I have seen a plate that looked a little like this, but not much, from very widely disseminated malignant disease. The way this has come on, the early fever, the absence of any masses, of any glandular enlargement, seem to make us safe in saying that this is not malignant disease.

I can think of nothing else, and although we have not the positive evidence of tubercle bacilli I see no reason to doubt that there is miliary tuberculosis in both lungs. If there had been cavities I should say we ought to have got sputum; so I think if they are there they must be very small and not connecting with bronchi.

If this is so, what else may be found elsewhere, for instance, in the brain? When a tuberculosis is miliary in the lungs it is quite likely to be miliary elsewhere, to have got into the lymph stream and been distributed that way. But I cannot see that we have any positive evidence of it in the spleen or kidneys or other organs. It seems to me quite possible that it is in all those situations, but we have no physical signs to prove it.

I am interested that all of these later temperatures were taken by rectum, which ordinarily means that the patient was unconscious, and yet nothing was said about that. I am thinking about the possibility of meningitis.

Miss Painter: The last entry simply says, "no new developments."

Dr. Cabot: I think we have to assume that these were taken by rectum because of difficulty in keeping her mouth closed on account of dyspnea. She had very rapid respiration and it was for that reason rather than because of unconsciousness that these temperatures were taken by rectum.

I think we have miliary tuberculosis of the

lungs and very possibly elsewhere, but no proof of that.

A PHYSICIAN: Is there evidence of hip disease? There was hip pain.

DR. CABOT: No, I should not say so, because it is not followed up. That was on one occasion, and for a definite period, and nothing of that kind was spoken of in her story here. We also wonder about meningitis; but if it was meningitis it ought to have got worse. Apparently it did not get worse, it got better.

DR. EDWARD L. YOUNG: Do you think she is normal peritoneally?

DR. CABOT: It is perfectly possible. The only thing said about the belly is the "scaphoid abdomen." I do not know how definite evidence that is for peritoneal tuberculosis. I have no knowledge of peritoneal tuberculosis in diagnosable form unless we have either (a) masses around the cecum, pericecal tuberculosis, or (b) fluid from peritoneal tuberculosis. There is, I know, a dry form, and it may be present here, but I do not know how we are to recognize it.

A PHYSICIAN: Do you expect any pathology from that hip?

DR. CABOT: No. I should say we had a good chance to find hip disease in our examination here and apparently we did not. It is curious why she should have had so much pain there. I cannot explain that.

A PHYSICIAN: Isn't it queer to have such extensive tuberculosis with so short a history?

DR. CABOT: My guess is that this process came very quickly; that she had a little at the apices for a good while, then it got into a blood vessel and was spread very quickly to all parts of both lungs. It is not at all unusual to have a tuberculosis as extensive as this in a short time. The striking thing is that at the apices the lungs do not seem to be more involved than anywhere else. In other words, it does not look like a process that has been chronic and become acute, as it so often does.

MISS PAINTER: Do you care to hear the house officer's note on the hip? "The hip symptoms may have been due to involvement of the joint or to a psoas abscess, and the latter may be the explanation of the stiff back."

DR. CABOT: They thought of psoas abscess, but they did not find evidence of it so far as I can see. They did not get any positive evidence, I should say.

As to intestine what can we say? We know perfectly well that the gastro-intestinal tract often is involved in these general tuberculous processes; but merely the existence of constipation does not seem to be enough to make us say so, in this patient.

X-RAY INTERPRETATION

The findings are those of tuberculosis of the miliary type.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Miliary tuberculosis.

DR. RICHARD C. CABOT'S DIAGNOSIS

Miliary tuberculosis of the lungs, and probably elsewhere.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Tuberculosis of the lungs.
General miliary tuberculosis.

2. *Secondary or terminal lesions*

Tuberculous ulcers of the ileum and cecum.
Tuberculous peritonitis.
Tuberculosis of the ilium.
Psoas abscess.
Tuberculosis of adrenals.
Tuberculosis of the bronchial and mesenteric lymph glands.

3. *Historical landmarks*

Areas of pigmentation of the skin.
Chronic pleuritis.

DR. RICHARDSON: This case in many ways presents a typical picture of tuberculosis, but there was one rather unusually situated lesion.

We were not permitted to examine the head. The skin was generally sallow and waxen, and on the inner aspect of the right thumb there was a small loss of substance with a grayish-red clean base.

There was no fluid in the peritoneal cavity, but the peritoneum rather generally showed scattered over it patches of reddish adhesions with smaller and larger tubercles,—a tuberculous peritonitis but dry.

The small intestine in the region of the junction of the duodenum and the jejunum showed a frank tuberculous ulcer. That is about as high as I have ever seen them here. We had one case a number of years ago where there was a question of one in the duodenum, but otherwise this is as high up as I have ever seen a tuberculous ulcer. From that point scattered along the small intestine were numerous frank smaller and larger tuberculous ulcers. In the large intestine a short distance from the ileocecal valve there was a tuberculous ulcer, but elsewhere it was negative. The mesenteric glands were slightly enlarged and showed small fibrocaseous areas.

The bronchial glands were slightly enlarged. Some of them showed small fibrocaseous areas, and one showed fibrocalcareous degeneration. The lungs on each side were bound down by old adhesions. The right lung in the region of the apex showed innumerable typical tubercles, no cavities. There were several small fibrocaseous nodules in the midst of pigmented

fibrous tissue a short distance from the apex. The tuberculosis here was older than it was elsewhere in the lung, where it presented as typical tubercles which were sown throughout the lung tissue. On the left side in the apical region there was a condition similar to the one in the right apex and in one place a very small cavity one centimeter across. The remaining portion of the lung was sown with tubercles.

The pericardium contained a slight excess of thin pale clear fluid. The circulatory apparatus generally was negative.

The liver weighed 1105 grams, showed numerous reddish fibrous adhesions extending to the diaphragm, in which were tubercles, and tubercles were dotted over the surface of the liver and to some extent over the diaphragm, part and parcel of the tuberculous peritonitis. Here and there in the substance of the liver were tubercles.

The spleen showed numerous reddish adhesions extending to the diaphragm, and like those about the liver they were dotted with tubercles. The surface of the spleen was dotted over with tubercles, and there were numerous tubercles in the substance of the organ.

The right adrenal showed no definite enlargement. On section in several places there were frank fibrocaseous areas five to ten millimeters across. The left was not definitely enlarged but showed several similar fibrocaseous areas.

DR. CABOT: Are those older than the lung process?

DR. RICHARDSON: Yes, except for those few places in the lungs where we found just that same condition. The skin we remember was generally waxen, somewhat sallow in places, best marked in the region of the lower part of the back, and there were several areas where there was a brownish-yellow tinge,—a question that is of Addison's disease. Of course this condition is like the anatomical basis for Addison's disease, only it is slight in amount compared with what we usually find in a typical case. But there is some pigmentation and there is some tuberculosis of the adrenals.

The kidneys showed a few scattered tubercles on the surfaces and a few in the substance.

Coming now to the spinal column, which interests us, the column itself was negative. On the left side in the region of the iliopectineal line and along the lower part of the ilium anteriorly there was an area of softening which presented as a layer of necrotic material extending up for a short distance under the iliacus and into the upper part of the psoas for a short distance, a small psoas abscess. Removal of this layer revealed on the surface of the ilium a small area which was granular and slightly eroded. The hip joint was apparently negative. So that we have here tuberculosis of the ilium with slight extension into the psoas muscle and along the posterior surface of the iliacus. The coverglass from the purulent material was negative for bacteria of any sort, no tubercle bacilli and no other bacteria. So far as that goes it is in favor of tuberculosis.

CASE 11222

MEDICAL DEPARTMENT

A Swedish carpenter of sixty-three entered June 20. He gave a history of numerous fevers but did not know of what kind. For years he had had a little cough. He drank one glass of beer a day.

For ten years he had had "catarrh of the stomach," vomiting sometimes as often as six times a day. His bowels had been very constipated, sometimes not moving for six days. For ten days he had had continuous frontal headache, had felt nauseated, had vomited everything and had had no movement of the bowels.

Examination showed a well nourished man. The tongue showed a brown coat. The throat was dry, with some mucus. The heart sounds were only fair in quality. The first sound at the apex was sharp, the second sound scarcely heard. There was no enlargement to percussion. The lungs were hyperresonant. There was questionable right femoral hernia. The left pupil was larger than the right, both reacted slightly to light. The knee-jerks were not obtained. The plantars were normal. The examination was otherwise negative.

The temperature was 97.4° to 102.3°, the pulse 100 to 145, the respiration 28 to 62, with wide daily swinging. The urine was normal in amount, cloudy, the specific gravity 1.009 to 1.011. There was no albumin or sugar. The hemoglobin was 85 per cent. The leucocytes were 7,400 to 4,100. The smear was normal. A Widal was negative. A surgical consultant reported, "Spermatocele. Femoral hernia or fatty tumor of groin."

A stomach tube was passed without incident. The first washings were returned as a slightly cloudy bile stained fluid without food residue. The next washing was clear. Finally the water was returned slightly blood tinged. The stomach held fifty-six ounces.

The patient was stupid. He repeatedly vomited large amounts. His bowels were moved freely by catharsis. The temperature was unexplained. June 23 a lumbar puncture gave 10 c.c. of clear fluid under normal pressure, containing a few lymphocytes, no excess. A culture was sterile. That day the stool was abnormally dark and gave a positive guaiac. The patient failed steadily. June 25 a few signs in the left lower back were consistent with a low-grade bronchopneumonia. Next day the patient failed more and more rapidly and about noon died. The heart action contin-

ued for some time after the respirations stopped.

Discussion

BY DR. MAURICE FREMONT-SMITH

NOTES ON THE HISTORY

The history does not give us much. If the history of one glass of beer a day is so, the probability of cirrhosis, likewise the possibility of his having catarrh of the stomach or chronic gastritis is slight. I think both those conditions have to be thought of. More likely is the possibility of an obstructing lesion at the pylorus. We have also to think of the possibility of central nervous system syphilis. A gastric crisis may be what we usually conceive, frightful pain and persistent vomiting clearing up suddenly, or it may be vomiting without pain, usually in periods of a few hours to days, coming on suddenly, ending suddenly, usually with periods of comparative well being between, and after a time certainly associated with the other symptoms and signs of tabes.

NOTES ON THE PHYSICAL EXAMINATION

In the light of the history it is hard to believe that he has been vomiting every day constantly. We should expect if he had a lesion of the pylorus sufficient to give him vomiting that he would not be getting enough nourishment.

The heart so far as we can tell is negative. We do not know the shape of the man's chest. One very frequently hears very distant heart sounds with no pathology in the heart. Of course the fact that he is sixty-three makes it probable that he has some arteriosclerotic heart disease, but I don't think there is anything in the physical examination to give us evidence of it.

Of course what we want to know is whether the Achilles reflexes were normal. We do not care about the plantars, but with absent knee-jerks we want to know whether the Achilles can be obtained. If they can be obtained we attach much less significance to absent knee-jerks.

The fact that one pupil is larger than the other and that they react slowly to light makes us again think of syphilis of the central nervous system, although the symptoms do not bear it out.

Why a Widal?

Just a word about femoral hernia. We sometimes find what we think on superficial examination to be a gland in the groin. It is well to keep in mind the possibility of a femoral hernia and how little it may show. A gland is hard and a hernia is soft. So if we have a soft mass in the groin we have to think of femoral hernia, and in any man who is vomiting we have to think of femoral hernia obstructing. In the light of his ten years of vomiting of course we can probably throw that out.

He had dilatation of his stomach. Whether that is due to an actual anatomical lesion at the pylorus or not we cannot say. Evidently they did not think he had an incarcerated or strangled hernia.

DIFFERENTIAL DIAGNOSIS

He died from bronchopneumonia. What brought him into the hospital? I think the most likely diagnosis is ulcer of the duodenum.

We have to think of uremia. Uremia gives symptoms often very hard indeed to distinguish from obstruction of the bowel, and again we have no blood chemistry here, but in uremia the non-protein nitrogen is high, as it is also in acute obstruction. The blood chlorids in intestinal obstruction are low. I should like to ask if anybody knows what the blood chlorids are in uremia?

Dr. Frank Fremont-Smith: They vary. They may be very low and they may be high.

Dr. Maurice Fremont-Smith: There is not much use in discussing that since we have no blood chemistry.

The possibility of syphilis has to be remembered. He was in here three days only. He may have been starting a bronchopneumonia when he came in. He came in with normal temperature and normal respirations. Probably his fever can be explained by bronchopneumonia.

I shall make a diagnosis of obstructive duodenal ulcer and bronchopneumonia.

Dr. Richardson: He was operated on, wasn't he?

Dr. Fremont-Smith: There is no record of anything but the lumbar puncture.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Arteriosclerosis, cerebral (with softening?).

DR. MAURICE FREMONT-SMITH'S DIAGNOSIS

Obstructing duodenal ulcer.
Bronchopneumonia.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Ulcers of the stomach.

2. *Secondary or terminal lesions*

Bronchopneumonia, left lung.
Acute pleuritis, left.
Slight arteriosclerosis.
Slight hypertrophy and dilatation of the heart.

3. *Historical landmarks*

Chronic pleuritis, right.
Femoral omental hernia.

Hemorrhagic areas of the esophagus.
Hypoplasia and malformation of the cerebellum with slight internal hydrocephalus.

DR. RICHARDSON: This man was poorly nourished. On the right side there was a small femoral omental hernia.

The left pleural cavity contained a small amount of dirty bloody fluid material with fibrin, acute pleuritis. The upper lobe of the left lung was not remarkable. The lower lobe of this lung showed posteriorly and laterally a dark reddish pleura spotted over with small reddish areas and coated with fibrin. In the lung tissue beneath that there were areas of bronchopneumonia. These extended into the lung substance for a depth of about three cm. and occupied about one-third of the volume of the lobe.

The heart weighed 356 grams. The valves and cavities were negative. The aorta all told did not show very much arteriosclerosis but in scattered places there were areas of fibrosis and fibrocalcareous plaques.

The stomach contained a moderate amount of thin bloody fluid, and beginning in the region of the pylorus and extending upward along the lesser curvature as far as the junction of the esophagus and stomach and over a width of three to four centimeters the mucosa was fairly smooth, but showed scattered over it in places discrete and confluent smaller and larger hemorrhagic areas. In places, more especially well marked towards the esophagus, there were small necrotic looking areas, and at a point about ten centimeters above the pylorus there were two well-marked ulcers. Microscopical examination of the ulcers showed no evidence of cancer.

Head. There was a slight amount of fibrous thickening scattered along the walls of the vessels of Willis. There was some hypoplasia of the right cerebellar hemisphere and some internal hydrocephalus. These were very slight, however.

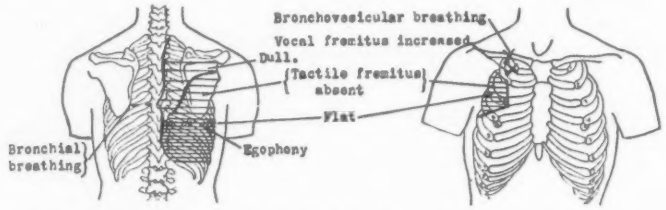
CASE 11223

SURGICAL DEPARTMENT

A Canadian farmer of thirty-eight entered June 13 complaining of general malaise and fever. He had always been well. He had had measles, mumps, whooping cough, chickenpox, and several mild attacks of grippe. The autumn before admission he weighed 196 pounds, his best weight. He now weighed 160.

Six weeks before admission he left Nova Scotia with a cold. On the train he became very ill, with chill and pain in the right chest and shoulder. On his arrival near Boston a doctor made a diagnosis of pneumonia and sent him to a hospital where he stayed until the day of admission, with a severe pneumonia and late afternoon temperature of about 100°, some pain in the side and shoulder, cough, and a little mucopurulent sputum which had not contained blood for several weeks. A test for tuberculosis was negative. For a week and a half he had been up and about the ward. In the Emergency Ward of this hospital a puncture was made in the right axilla with removal of a few cubic centimeters of thick pus.

Examination showed a thin, wasted man with no abnormalities except for the chest (see diagram). The expansion on the right was limited. Tactile fremitus was absent over the base of the right lung behind. On percussion all but the very top of the right lung was duller than the left. There was a fairly definite line of flatness which ran around to the front, as shown in the diagram. The breath sounds were much fainter towards the base than at the apex. Over the base of the right lung behind spoken voice was not much decreased but was nasal in quality. A faint pleural friction rub was heard over most of the right base behind. There were a few coarse râles at both bases. The left lung was normal.



Before operation the temperature was 98°-99.2°, the pulse 113-93, the respirations normal. The urine and blood were not recorded. There was a small amount of mucopurulent sputum showing well preserved pus cells. Streptococcus in short chains was the predominating organism. A few pneumococci. Hematoidin crystals were present. Pus from chest showed no organisms except streptococcus. Several hematoidin crytals were present. June 13 X-ray* (see Plate I) showed the outline of the diaphragm obscured on the right side. Above it, occupying the greater part of the lower half of the right chest, was an area of even dullness with sharply defined margins. The process was of the greatest extent along the axillary margin, did not reach to the root of the lung, and was apparently not continuous with the shadow of the diaphragm. The heart was not

*The report of this X-ray examination was omitted in the history as discussed by Dr. Cabot.

displaced. The upper part of the right chest was slightly less radiant than the left, suggesting incomplete expansion of the lung on this side. On the left side the lung was of unusual brilliancy, probably because of a moderate amount of emphysema. The diaphragm was sharply outlined. The costophrenic sinuses were clear.

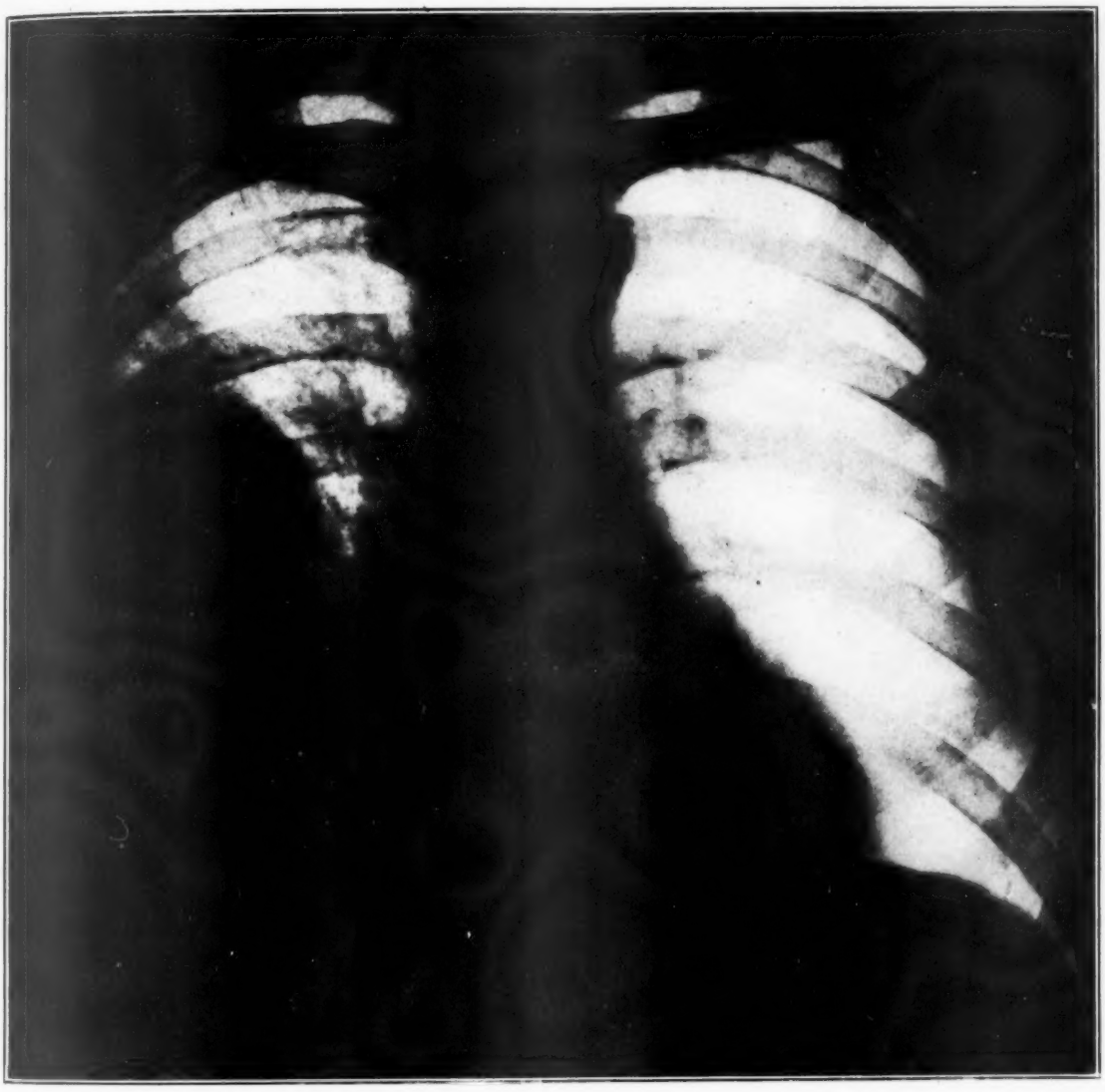


PLATE I. The outline of the diaphragm is obscured on the right side. Above it, occupying the greater part of the lower half of the right chest, is an area of even dullness with sharply defined margins. The process is of the greatest extent along the axillary margin, does not reach to the root of the lung, and is apparently not continuous with the shadow of the diaphragm. The heart is not displaced. The upper part of the right chest is slightly less radiant than the left, suggesting incomplete expansion of the lung on this side. On the left side the lung is of unusual brilliancy, probably because of a moderate amount of emphysema. The diaphragm is sharply outlined. The costophrenic sinuses are clear. The film is defaced.

June 14 operation was done. There was profuse drainage after it. Irrigation returned well; part could be aspirated. Dakin's solution was tried for one day, but caused coughing, so saline irrigations were resumed. The patient was comfortable. A Wassermann on the blood was negative. The patient ran an afternoon temperature of 99.6°-101°. June 28 and 30 the tubes came out. On the second occasion only one was reinserted. Irrigation through this one tube came back outside. The wound apparently was healing from below. There was slow improvement. July 8 the tubes came out and could not be replaced at any depth. They were left out. During the next two days the patient had several chills with a temperature up to 104°. The tubes were replaced. Irrigation was good.

The morning of July 10 there was pain at the left base with dullness to percussion. In the evening the respirations were 40-50. There was definite dullness to flatness low in the left axilla with coarse moist râles of a soft character. There was distant breathing and diminished voice sounds and tactile fremitus. X-ray July 10 showed increase in the lung markings throughout the chest, and a shadow of increased density over the midportion of the

left chest, probably representing pleurisy. The outline of the diaphragm was visible on both sides. There was limited excursion on both sides. The costophrenic sinus was clear on the left, indistinct on the right, probably because of old adhesions in the right chest. He continued to have chills about once a day, though he felt better. July 14 X-ray (see Plate II) showed at the left base and the left axilla were more marked. There was definite flatness and diminished voice and breath sounds with medium consonating râles. Thirty cubic centimeters of one per cent. mercurochrome was given intravenously. The whole of the lower abdomen was somewhat rigid and tender. July 18 the patient died.

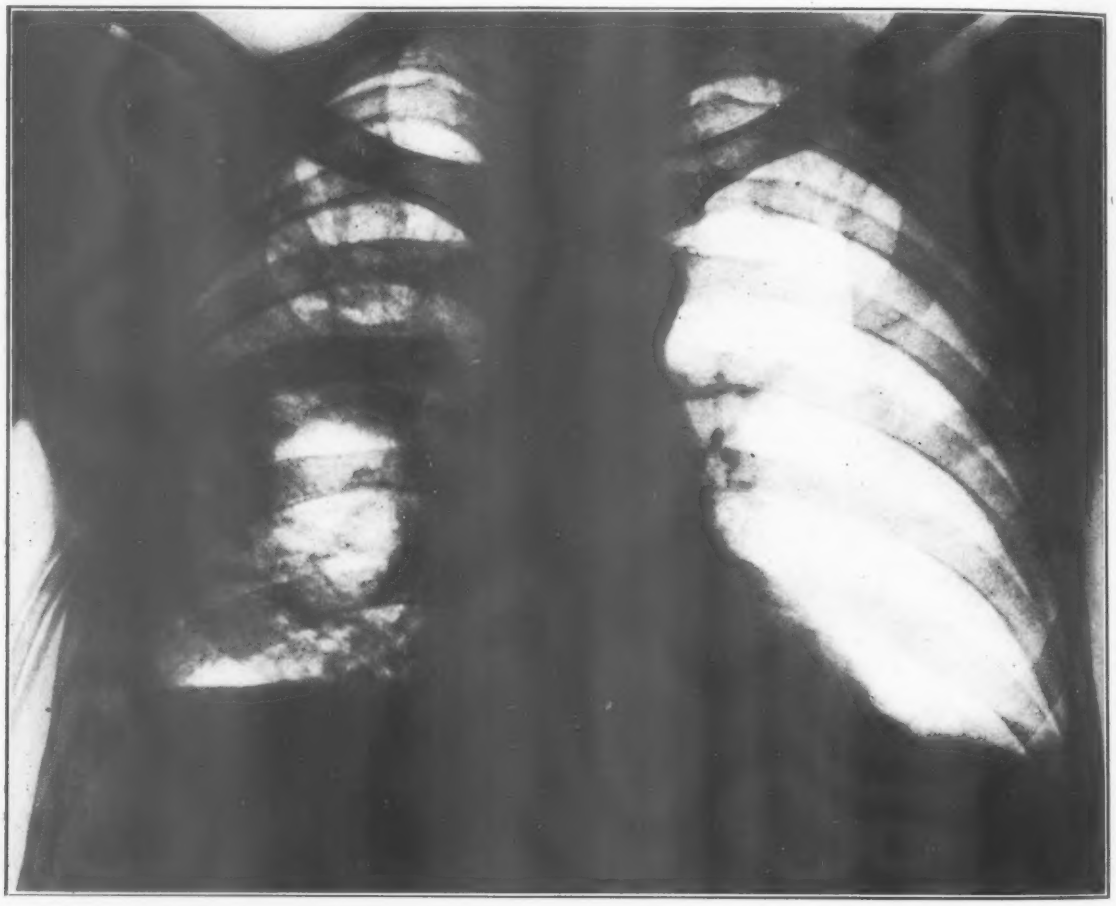


PLATE II. Shows a catheter draining the right pleural cavity. There is definite increase in all the lung markings in the right base particularly about the midchest. The periphery and lower portion of the chest is increased in density, suggesting an old pleurisy with probable adhesions. The outline of the right diaphragm is obscured, as is also the right costophrenic sinus. There is a horizontal line over the lower right chest suggestive of the upper border of a small amount of fluid at the right base. The left costophrenic sinus appears hazy, perhaps because of pleurisy or a small amount of fluid in the left base.

definite increase in all the lung markings in the right base, particularly about the midchest. The periphery and lower portion of the chest showed increased density suggestive of old pleurisy with probable adhesions. The outline of the right diaphragm was obscure as was also the right costophrenic sinus. There was a horizontal line above the lower right chest suggestive of the upper border of a small amount of fluid at the right base. There was also some limitation of motion of the left diaphragm. The left costophrenic sinus appeared hazy, perhaps because of pleurisy or a small amount of fluid in the left base. To try to get rid of it the wound was irrigated with the patient prone. He continued to have many chills and sweats. A blood culture was negative. July 17 the signs

Discussion

BY DR. HUGH CABOT

There appears nothing in the previous history which throws any particular light on his present condition. The loss of weight referred to as having taken place since the previous autumn has probably taken place in the last few weeks, during his present illness, and there is no reason for crediting it to any underlying condition.

The history of the attack which began just after he left Nova Scotia is very typical of lobar pneumonia. There is a strong suggestion that his pneumonia ran an average course and that he developed an empyema a considerable time before admission to this hospital. The exam-

ination fits closely with this working hypothesis, the examination of the chest being entirely compatible with a considerable empyema. The fairly good transmission of the voice at the base of the right lung is not, I think, incompatible with a large accumulation of pus. The examination of the sputum suggests that he has an infection with two organisms, both a streptococcus and a pneumococcus. The condition at the present time might be regarded either as chronic or perhaps subacute empyema and the indication for operation is clear.

The precise method which should be employed will depend somewhat upon the evidence of a high degree of fixation of the lung. During the period when the lung is not firmly bound down it is probably wise to attempt some form of suction upon the cavity during the first few days; in acute empyema at least this will often diminish the size of the cavity. It is, however, a less satisfactory and safe method of treatment and undoubtedly is accompanied by some risk of complications. A safer method and the one which should be employed in true chronic empyema should consist of thoroughly adequate drainage at the lower limits of the cavity. This will involve the resection of a portion of a rib in order to introduce tubes of sufficient size.

Some question might arise in regard to the method of anesthesia. Probably the safest method is local anesthesia, but with nervous patients some form of general anesthesia is less disagreeable, and we have come to believe that anesthesia with ethylene is the method of election. This has in our hands appeared preferable to nitrous oxid and oxygen (the only other general anesthesia to be considered) in that patients can be kept of better color and there appears to be less strain upon the sound lung.

DR. CABOT'S PRE-OPERATIVE DIAGNOSIS

Chronic empyema.

X-RAY INTERPRETATION

Encapsulated empyema.

PRE-OPERATIVE DIAGNOSIS

Encapsulated empyema.

OPERATION

Local novocain. The chest was tapped in the midaxillary line and sections of the sixth and seventh ribs were removed, entering a large empyema cavity full of thick creamy pus. The opening made was not in the dependent portion of the cavity, but pre-operative taps below this point for some reason failed to yield pus.

BACTERIOLOGICAL REPORT

Empyema, pneumococcus.

FURTHER DISCUSSION

I note that they elected to use local anesthesia and resected portions of the sixth and seventh ribs in the midaxillary line. This was not at the most dependent portion of the cavity and to that extent will not provide wholly satisfactory drainage.

I am interested to see that Dakin's solution proved irritating and had to be replaced by salt solution. This is a not uncommon experience, particularly during the early days of drainage, but it has been our experience that later Dakin's solution can be used, particularly if it is diluted during the early stages. In our hands the only positive contraindication for the use of Dakin's solution has been the presence of a bronchial fistula, which can be readily discovered by the fact that patients taste the Dakin's solution though they may be unaware of the entrance of salt solution into the major bronchi.

The tendency of the tubes to come out at the end of about two weeks is a common happening. If we are justified in concluding that they were not using Dakin's solution and that they were still having afternoon fever rising occasionally to 101°, I should doubt the wisdom of leaving one tube out as early as the sixteenth day, this particularly in view of the fact that the irrigation was apparently not entirely satisfactory. The leaving out of all tubes on the 8th of July may be assumed to be due to the opinion that the cavity had substantially closed. It is very important to be sure that this has taken place, since if there is any considerable cavity remaining the tendency of the wound to heal on the outside with reformation of the empyema is fairly considerable. The occurrence of the chills with high fever following removal of the tubes suggests that their removal was premature. The development of symptoms on the left side following immediately upon the failure of drainage and the occurrence of chills tempts one to assume that the infection of the left lung was in direct consequence of the failure of the empyema cavity to drain satisfactorily.

The further development of the infection on the left side during the subsequent eight days suggests pretty widespread infection with the development of a small amount of fluid. The physical signs and the description of the X-ray examination suggest a patchy process perhaps due to multiple abscess formation or to a bronchopneumonia.

The use of mercurochrome on the 17th was too late for us to form any judgment as to its effect. The development of tenderness and rigidity of the abdomen on the same day suggests the possibility of a peritonitis, but might perfectly well be produced by the process above the diaphragm without that assumption.

Necropsy should show partially healed and drained empyema, right, with extensive pleural adhesions on that side. The left lung will I think show some pleurisy, very likely a small

amount of fluid, probably infected, but probably not enough to be dignified by the term of empyema. The rest of the process I am inclined to believe will be found to be multiple abscesses with surrounding patches of pneumonia rather than a frank bronchopneumonia. There will also possibly be a purulent bronchitis associated. For the rest I doubt whether the evidence is sufficient to justify the diagnosis of peritonitis. The spleen will probably show evidence of chronic infection.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Empyema.
Septicemia following lobar pneumonia.
Rib resection.

DR. HUGH CABOT'S DIAGNOSIS

Empyema (right) drained.
Multiple abscesses of lung (left).
Pleurisy (left) infected.
Soft spleen.
Peritonitis?

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

Evacuated empyema, right.
Abscess of the right lung.

2. *Secondary or terminal lesions*

Septicemia, streptococcus.
General fibrinopurulent peritonitis with abscesses of the liver and spleen.
Fibrinopurulent pleuritis.
Soft hyperplastic spleen.

3. *Historical landmarks*

Operation wound.
Chronic pleuritis, right.

DR. RICHARDSON: Trunk. In the right thoracic wall about the axillary line there was a scar 5 cm. long at the anterior end of which an opening extended into the right pleural cavity. Portions of the fourth and fifth ribs in this region were wanting.

The peritoneal cavity contained much purulent fluid and the peritoneum generally was coated with fibrinopurulent material.

The margin of the liver was 2 cm. below the costal border in the right mammillary line. The right lower border of the diaphragm was at the fourth rib, left fifth rib.

There was a small amount of purulent fluid in the right pleural cavity, and a small amount of cloudy fluid and fibrin in the left pleural cavity. The right lung was bound down by pleural adhesions at the base of the operation wound mentioned.

The trachea and bronchi contained much reddish frothy fluid.

The apex of the right lung was negative. The tissue generally was spongy, dirty pale red, with scattered blackish-red areas, and was saturated with dirty pale-red to blackish-red frothy fluid—hemorrhagic edema. In the region of the lower part of the upper lobe and the upper part of the lower lobe on the right lateral aspect the tissue was a little leathery and surrounded an abscess 5 cm. across which rested just below the pleura. The lung tissue in this region was more or less disintegrated and involved by the adhesions mentioned. The pleura of the lower lobe was coated with a small amount of fibrinopurulent material. Left lung: Voluminous. The apex was negative. The tissue generally was pale, spongy, and yielded a moderate amount of dirty reddish frothy fluid. In the region of the lower half of the lower lobe the tissue was blackish-red, slightly leathery, and yielded much slightly frothy bloody fluid. The pleura over this portion of the lobe showed a slight fibrinous coating.

The liver weighed 2670 grams,—considerably enlarged. The surface was coated with fibrinopurulent material in great amount in places, and in these situations the exudate rested over small collections of pus which burrowed into the liver tissue for short distances. The liver tissue elsewhere was generally of fair consistence and rather pale. Cover glass from the abscess pus showed diplococci and bacilli.

The spleen weighed 440 grams,—moderately enlarged. The surface was coated with much fibrinopurulent material which in many places rested over smaller and larger collections of pus which burrowed into the splenic tissue for considerable distances. The splenic tissue generally was dirty brown-red, punky to mushy.

The kidneys combined weighed 475 grams,—slightly enlarged. The capsules stripped, the surfaces were smooth, the markings were made out, and the cortex measured 7-8 mm. The microscopic examination showed no nephritis. The tissue was of fair consistence, a little wet, and showed in places slight reddish mottling.

From the heart blood streptococci were recovered.

FURTHER DISCUSSION BY DR. CABOT

The findings in the chest were pretty much what might be expected. It would probably be impolite to call attention to the difference of opinion beween the pathologist and the surgeon as to which ribs were resected. In these disagreements the pathologist is likely to win.

I missed my guess on the subject of the infection of the peritoneal cavity, since this was clearly a very important factor in his death. The abscesses of the liver and spleen appear to be secondary to the peritonitis and to have come from without, so to speak, rather than from within. I think it is a little extraordi-

nary that the symptoms suggesting peritonitis should have developed so late, as the process as found by the pathologist was evidently of a good deal more than twenty-four hours' standing.

CURRENT LITERATURE

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COD LIVER OIL CONCENTRATE

DUBIN and FUNK (*Jour. Metabolic Res.*, 4:461, November-December, 1923, recently received) discuss the definite establishment that cod liver oil is specific for rickets and deficiency-ophthalmia, both as cure and preventive; and further that this effect is due not to the oil but to its vitamines. They report studies with different fractions of the oil. By hydrogenation they have prepared an active substance 1000 times more concentrated than the oil; and have learned—most promising progress in their judgment—that these vitamines are in the ether-soluble, non-saponifiable portion of the oil. The concentrate is equally effective in children, for whom it is mixed, necessarily anaerobically, with sugar as one-grain tablets, arbitrarily made equivalent to half a teaspoonful of cod liver oil. The concentrate is non-toxic, even in very large doses. They believe that infants, as early as one month after birth, should be given cod liver oil if it can be tolerated; if not, the child should receive its equivalent in the form of a concentrate, as a prophylactic against rickets and other nutritive disturbances traceable to the lack of fat-soluble vitamines in the diet. Such a procedure would ultimately eliminate rickets as a factor in infant nutrition, and would be directly comparable with the present routine practice of giving orange juice for the prevention of scurvy.

Although vitamine A is known as the "growth-promoting, anti-ophthalmic vitamine," satisfactory growth on a given diet will take place only if it is adequate as regards the quality, quantity and caloric value of its components. Under suitable conditions any one of the dietary constituents may be the limiting factor in growth. Accordingly, it is essential to exercise care in this respect in the evaluation of any of the vitamines.

It may be, for example in some of their experiments, that the greater need for vitamine was due to the high carbohydrate, low fat diet used.

Fischer (ibid.) treated simultaneously three groups of rickety children with the concentrate, with oil, and with sunlight; confirming clinical observations with the X-ray. Typical healing was noted in all, though best with concentrate or oil. Incidentally he found that many of the children had been fed on cow's milk diluted with water, that they often had loose greenish and mucous stools, and that most of these improved on a starvation diet of tea for one day, followed by Finkelstein's protein-milk. He also happened on six children with pyloric spasm and continuous vomiting, and relieved this by one or two teaspoonfuls of farina, so *thick* that it could not be poured, before each milk feeding. His concentrate tablets were coated to prevent oxidation, but before administration they were dissolved in a teaspoon with a little water. His X-ray pictures show clearly the lower end of the radius and ulna cupped and frayed before treatment, rounded out afterward.

[H. G.]

ACIDOSIS

ALLEN and WISHART (*Jour. Metab. Res.*, November-December, 1923) find that experimental acetone poisoning is characterized by dyspnea, drunkenness, coma and death; that in this intoxication like diabetic coma the plasma bicarbonate is *not* an accurate measure of the alkali reserve; that specific intoxication with the acetone substances, with an element of true acidosis, is the chief known cause of diabetic coma.

[H. G.]

VENTRICULAR FLUIDS IN CASES OF BRAIN TUMOR

BERNARD J. ALPERS (*Amer. Jour. Psychiat.*, January, 1925), made a number of tests on 102 ventricular fluids obtained from Cushing's clinic. In 45 per cent. he made a correct diagnosis of brain tumor, based largely on the goldsol curve. The other tests in the fluid were of only slight value. There was no typical curve for brain tumor, but most of the reductions were in the lower dilutions.

[H. R. V.]

BLOOD CHOLESTEROL IN ACETONEMIA

SJOLLEMA and VAN DER ZANDE of Utrecht (*Jour. Metab. Res.*, November-December, 1923) used Grigaut's technic, which they state of no great difference from Bloor's, a conclusion which the reviewer is inclined to think worth further proof. They found in cows suffering from acetonemia after parturition that the cholesterol was doubled, and attributed this to toxic functional changes in the liver.

[H. G.]

STUDIES ON ABNORMAL ARTERIOVENOUS COMMUNICATIONS

REID, M. R. (*Archives of Surgery*, March, 1925).

Reid presents a very interesting paper of 36 pages on these lesions, both acquired and congenital. He presents some very excellent photographs of patients showing deformities and other lesions produced by arteriovenous communications of various sorts. He gives a tabulated report of 33 cases. Of these, 27 were acquired and 6 were congenital. The locations were: Femoral 8, intracranial 6, subclavian 5, popliteal 3, carotid 2, head 4, hand 2, lip 1, eyelid 1, tibia 1. Twenty-six patients were cured by operation, 3 were improved, 2 were not treated, and 2 died. This is a remarkable result in operative treatment, considering the seriousness of the condition and the difficulty in dealing with it.

[E. H. R.]

THRICE-COOKED VEGETABLES

STILLMAN (*Jour. Metab. Res.*, November-December, 1923) finds from defective growth experiments that thrice-cooked spinach and cabbage are nearly or totally devoid of vitamines.

[H. G.]

ARTERIAL HYPERTENSION

HERING of Köln (*Münch. med. Woch.*, February 27, 1925) discusses the reduction of arterial hypertension by vascular reflex.

[R. M. G.]

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THE COMPENSATIONS OF ADVANCING YEARS

IT is universally admitted that the early forties are rather a critical time in a man's life. At that time the first signs of degenerative disease appear; the figure assumes a rotund outline which points to later obesity, or atrophy of the muscles of the lower leg suggests a lean old age. At forty, a man has usually struck his gait. If he is ever to accomplish anything, he may be expected already to show definite signs of so doing.

As regards the medical profession, particularly in conservative New England, people are not likely to repose much confidence in a doctor until he can show a bald head or at least a liberal sprinkling of gray hair. But at forty he may justly claim a certain degree of mellowness and experience, and may be said to be on the threshold of his best period, so far as professional prosperity is concerned. To his children, or to his friends' children, he seems already an old man; to himself, he seems still young in spirit, but with enough experience to give him a certain poise and feeling of confidence which is very reassuring.

Poets sing the delights of youth, and indeed there is a rare and delicate beauty in that feeling of anticipation, that expectation of great accomplishment, which every youth of mettle experiences. Middle age has its opportunity now. It is *in medias res.* Fanciful aspirations are discounted; castles in Spain have collapsed. A more sober judgment tells the man of forty just about where he stands and how far he can go.

It is this feeling of establishment and self-confidence which is the compensation of advancing years. The doctor of forty knows that he has accumulated a store of knowledge and a facility in its application which he can employ both for his patients' benefit and his own reward. He has developed a tool with which he can carve his name on many hearts, but he must take pains to keep it sharp and burnished. He may not neglect—in fact he should be more assiduous in this than ever—to keep in touch with medical thought. He must be ready to share his knowledge with others. More than ever before he needs to care for his own health, by being examined periodically, by getting proper recreation in the open, by regular exercise. By attention to these matters, he can prolong that rather brief period of greatest activity which is allowed him, and can make the "middle passage" a voyage of achievement and solid satisfaction which will compare favorably with any period of life.

ETHYL GAS

THE greater efficiency of motor fuel secured by the addition of tetraethyl lead to gasoline is of interest to almost everybody provided that the dangers incident to the use of this chemical can be overcome. The chemical itself is known to be one of the most deadly poisons and a reasonable suspicion exists that even the small percentage which is added to gasoline may affect the health of those who may inhale the exhaust gases of those internal combustion engines employing this compound. Statements have been made in the daily papers that some investigators have felt that no other harm is likely to result from the inhalation of the exhaust than the already well known lethal effect of the carbon monoxide content. This danger of carbon monoxide depends on the concentration of this gas in the atmosphere. Other persons interested in health matters evidently feel very suspicious that all is not known of the possible danger of the use of ethyl gas, for although the percentage of the lead compound in a given volume of gasoline is extremely small, the enormous amount of gasoline burned in city streets must contaminate the air to some extent and if the ethyl gas is burned leave deposits of lead to an appreciable amount. This contamination may not be a source of danger because of its insignificant amount as has been claimed, but this is not universally conceded.

At a recent conference in Washington, D. C.,

after prolonged discussion of the subject, it was suggested in a resolution that Surgeon General Cumming should appoint a commissioner to study this subject and render a report if possible by January 1 next.

Dr. David L. Edsall, Dr. Haven Emerson, Dr. Yandell Henderson, and others are reported to be among those urging a thorough study of the subject.

The questions involved are important from a commercial as well as health viewpoint, because economy in the use of gasoline may become necessary in the future and the general distribution of a powerful poison even in minute quantities may affect the health of many people.

The Massachusetts Medical Society

THE ANNUAL MEETING

THE complete program of the forthcoming One Hundred and Forty-Fourth Anniversary of the Massachusetts Medical Society, on June 9 and 10, has been mailed to each Fellow, and also appeared in last week's JOURNAL. The main difference from, and it is hoped improvement upon, other recent annual programs is that practically the entire session will be held in one place, thus doing away with former time conflicts between the papers of the different sections. A careful reading of the program indicates that this change will mean a decrease in the total quantity together with an increase in the average quality of the papers presented. Four papers will be read by men from outside the State, and eleven papers by Fellows of the Society. All papers on the Official Program will be read in the Hall of the John Hancock Building, 197 Clarendon Street, between St. James Avenue and Stuart Street. The Hall is on the fourth floor, and is reached by elevators from the main corridor of the street floor. It is a large, new, well lighted, well ventilated and comfortable auditorium. The Committee of Arrangements will maintain a desk at the door of the Hall, for information, registration, the sale of dinner tickets, and the handling of in-coming telephone calls. The Annual Dinner will be served in the Ballroom of the Copley Plaza Hotel on Wednesday, June 10, at 6.30 P. M. Tickets for the dinner will be on sale at the information desk throughout the meeting to all Fellows who have paid their dues, at $2.00 each. Tickets for guests will be $4.00 each. Tables at the dinner will be set for groups of ten. Any group of ten Fellows desiring to sit together will please send their names in advance to the chairman of the Committee of Arrangements, Dr. Dwight O'Hara, 751 Main Street, Waltham, and the proper reservations will be made.

THE PRESIDENT'S ADDRESS BEFORE THE AMERICAN MEDICAL ASSOCIATION

BY the courtesy of Dr. Fishbein we have been given permission to publish the address of Dr. William D. Haggard, President of the American Medical Association.

This came after the first forms had been printed and necessitated using space in the editorial section.

THE ROMANCE OF MEDICINE*

WILLIAM D. HAGGARD, M.D.

NASHVILLE, TENN.

"Taught by art divine, the sage physician eludes the urn, and chains or exiles death."

The story of medicine enthralls the imagination by its infinite charm and arouses admiration for its victories in the battles against disease.

Its romance is so compelling that men cannot be unmoved by its blessings, when they realize with us its splendor. The records of the discoveries of medicine are more fascinating than fiction; their marvelous benefits are as if in response to Jeremiah's lament, "Is there no balm in Gilead, is there no physician there?"

The price of these great benefactions is beyond all the rubies of the world; it can never be computed and it can never be paid. In the Middle Ages the average life of man was twenty-odd years. Now the span has been increased almost threefold. Compute if you can the growth in economic value of a human life extended to this lengthened expectancy and worth an ever-increasing yearly wage. Compute the value given by bestowing these benefits to all the nations of the world. If you can estimate these things, only then will you have totaled the economic wealth contributed to mankind by this incomparable service. And in the precious years that have been added to the span of life, countless days of unhappiness and suffering have been eliminated. Innumerable ills have been parried from the feeble flesh of man. What a glorious thing it is when the piteous procession of men and women beg of you to be allowed to live a little longer on any terms, that you can succor them by the knowledge of Nature's secrets that are your heritage from the studies of the scholars of all times.

Wonderful as the past has been, the last fifty years of medicine has witnessed more achievements of a miraculous character than the five preceding centuries. This is the golden age of medical advancement. Discoveries of transcendent import have trooped on us in bewildering

*President's address before the American Medical Association at the Seventy-sixth Annual Session, Atlantic City, N. J., May, 1925.

profusion. Allusion to some will suffice to give a glimpse of the glamour by which all are pervaded. The last century gave us ether and chloroform, by which, as Oliver Wendell Holmes said, "the fiercest extremity of suffering was steeped in the waters of oblivion and the deepest furrow in the knotted brow of agony has been smoothed away forever." Antisepsis has revolutionized surgery and made possible the present proud perfection of that most brilliant of all the arts. Mathematically, it has reduced the death rate from all amputations from 65 per cent. in Paris in 1861, to 4.5 per cent. in Pennsylvania today. Among its many almost incredible feats is now recorded a successful effort to cut the shortened cords inside the heart itself, and allow the fettered valves to close again securely. Although the heart is only one inch from the surface of the body, twenty centuries of surgery rolled by before the scalpel could travel that inch.

Medicine is the only profession that is literally and altruistically devoted to professional suicide. It endeavors chiefly, not alone to cure, but to prevent disease, and thus to banish from mankind pain, suffering and ultimate death from maladies of the flesh. But what it cannot prevent it must cure. What it cannot cure it must palliate. Angina pectoris, the merciless, is now being attacked surgically and the heart-pang relieved in certain cases by severing the sympathetic nerves in the neck that transmit the unendurable pain.

The discovery of the germ of tuberculosis, "the Captain of the men of Death," was the beginning of the annihilation of the Great White Plague and is a more important victory for mankind than resulted from the Fifteen Decisive Battles of the World. Already the death toll has been reduced from 160 per hundred thousand in 1910 to 97 per hundred thousand in 1922. But the fact that even today every third minute on the clock's dial marks a death from tuberculosis challenges us to still greater efforts. It is now largely a social problem. As the contagion for the most part comes from the lungs and mouth, we must teach everybody not only to burn expectorations, but to avoid this contagious material in every possible way. We must prevent, rather than be faced by the necessity of attempting later cure.

That the spirochete was the actual cause of syphilis, the great Black Plague, was discovered by Schaudinn in 1905. Miraculously enough, in the next year Ehrlich discovered that his six hundred and sixth experiment with arsenical compounds gave the present arsphenamin, with power to stay its ravages.

A romance in medicine to grip the admiration of the world is the subjugation of typhoid fever. In the Boer War, typhoid destroyed 8,000 British soldiers, while only 7,000 were killed by all the enginery of Mars. In the World War, as a result of antityphoid vaccine, which was given to each of our 4,000,000 American soldiers, and increasing knowledge of sanitation, only 1,083 cases of typhoid fever developed, with only 158 deaths. If the ratio between enlistments and deaths from typhoid in the American Civil War had been maintained in the World War, there would have been some 226,000 cases, with 62,694 deaths. This conquest of typhoid is one of the greatest benisons of modern medicine.

Under a picture that was current recently, of a fervent minister, robed and with upraised hand, was the legend "Preaching to beat Hell." We, as ministers of health, must also unceasingly preach—preach pure water, fresh air, sunshine, sanitary environment, plain, wholesome food, exercise and right living—to defeat the powers of darkness and bring the purity of heaven to earth.

Most dramatic among modern victories is the conquest of yellow fever, the scourge of the Spanish Main, "the pestilence that walketh in darkness; . . . the destruction that wasteth at noonday." An epidemic of this in 1793 took the lives of 10,000 people in Philadelphia in three months and kept the Southern states in consternation with the recurring seasons. Its devastation prevented the genius of France from building the Panama Canal across a zone which for four centuries had been called the "white man's grave." The indomitableness of Roosevelt was matched by the genius of Gorgas, the master of yellow fever, who made of the charnel-hole of Panama the healthiest spot on earth. Thus occurred the union of the oceans through the canal.

In the opening year of the twentieth century, Reed, Carroll, Lazear and Agramonte proved, through the peace-time bravery of American soldiers who bared their bodies for the fateful experiments, that a mosquito transmits yellow fever. While experimenting with death-laden *Stegomyia,* one of these army surgeons was bitten on the hand and sacrificed his own life in the consuming passion to save his fellow man. No man hath greater love than this. As Agramonte said of him, "One more name, that of Jesse W. Lazear, was graven upon the portals of immortality." Is it immodest for us in recounting this heroic self-sacrifice to have the pride of guild and to regard proudly the noble deeds of our profession?

In the last decade, many diseases of the heart, kidneys, gallbladder and other organs have been shown to be derived frequently from the foci of infection around the teeth, in the tonsils, in the sinuses of the nose, and in other structures. This great discovery has enabled the physician to administer in many cases the most effective of all treatments, the removal of the cause. Rosenow has taken the infectious material from the vicin-

ity of stone in the kidney and, by implanting it in a cavity drilled in the healthy tooth of a dog, has been able to produce stone in the dog's kidney in 85 per cent. of the cases. By injecting into the veins of a rabbit's ear material taken from an infected appendix, from ulcer of the stomach, and from inflammations associated with gallstones, Rosenow has also been able to reproduce the disease in the organ from which it was obtained. This experimentation seems to show the specificity of certain micro-organisms for regularly attacking the same structures, under definite conditions. We know, for instance, that the agent in infantile paralysis gains access through the nasal cavity and lodges in the anterior horn of the spinal cord. Prevention or even eradication of diseased foci thrice arms the physician of today for the throttling of many insidious diseases or, if they have gained headway, their amelioration or cure.

The discovery of radium by Madam Curie close on the discovery of the roentgen ray by Roentgen in 1896 was not only a triumph in wresting another secret from the physical world, but has furnished a most necromantic weapon for the cure of certain forms of cancer and for its palliation in hopelessly neglected cases.

The use of safe drugs for local injection in rendering surgical operations painless is now like a performance in a world of magic. Antitetanic serum to prevent lockjaw is the king of preventive serums. Practically every battle casualty in France was potentially infected with lockjaw. Every wounded man that came back from the front had A. T. S. (antitetanic serum) pasted on his forehead. The universal use of the serum mercifully prevented the terrors of lockjaw.

The transfusion of blood into the veins of those who from injury or disease are sickened into the whiteness and coldness of death quickly brings back the glow to the cheek and the red-lipped promise of reclaimed life. This boon was made possible by the discovery by Mall, of the four types of blood; the use of an untyped and dissimilar blood-group donor is most dangerous.

We physicians and the whole world are daily debtors to the innumerable instruments of precision, to the blood pressure apparatus, the basal metabolism rate machines, and the newer instruments for administering gases, that render anesthesia almost totally devoid of danger.

What is more astounding than the revelation in the last few decades of the part played in our bodies and lives by the wonder-working ductless glands? They send weird and powerful hormones as chemical messengers to command the functions of the body. The thyroid gland presides over our growth; its absence makes the gnomelike grotesque idiot, the cretin. Administration of the life-giving thyroid extract veritably restores the dead in mind and brings dwarfed bodies back to blooming youth. Compared to these realities, legends of old-time restoration of the dead are but interesting myths.

It seems incredible that the pituitary gland at the base of the brain, weighing only 2 grams, will, when diseased, cause the prodigious growth of a giant, and when its secretion is deficient produce the enormous fat deposit of the pathologically obese.

The greatest romance of the last few years in medicine was the discovery of insulin by Banting. The wizardry of rescuing the diabetic patient by this remarkable discovery is truly a marvel.

Goiter is largely due to a deficiency of iodin in food and water. While it can be successfully removed, with an infinitesimal death rate, it should be prevented in childhood by the administration of iodin in small quantities to children twice a year. These wonder-working ductless glands largely determine personality. Individuality seems, after all, to be largely the product of the chemistry of our bodies.

Passing from the intangible to the practical, we may note that the solution of the pellagra problem seems nearer with the increasing belief that pellagra is a deficiency disease, possibly from a shortage of vitamins, and seems to be caused by faulty protein food mixture and is greatly benefited by fresh meat and milk. These and other contributions of medicine to the relief of humankind are more thrilling to the man of science than all the wars of selfish kings.

I am not an unqualifying eulogist of the profession of medicine; I am but telling the plain, unvarnished truths that constitute the romance of our great calling. Like every sublunary institution, that of medicine is subject to evils, many of them common to it and other professions, and many others pertain to it alone. We are prone to be overenthusiastic about each new advance; on the other hand, many of us are as unable to evaluate the worth of a fresh discovery as was Joseph Bell (the original of Sherlock Holmes) to recognize the solemn significance of antisepsis, as advocated by Lister, albeit he was his daily colleague in the wards of the Glasgow Infirmary.

It may not be regarded as romantic, and therefore within the realm of this paper, to recall that the cause of typhus fever is the bite of an infected body louse; but when one thinks of the terrifying epidemics on sea and land which have been stamped out by this knowledge and by sanitation, our medical accomplishment rises, not only to the romantic, but to the sublime. Likewise the most fatal of all infections, plague, bubonic and pneumonic, is transmitted to man by the flea that has bitten the infected rat. The extermination of the rat to prevent it and Haffkine's vaccine to cure it is a historic achievement. Rocky Mountain spotted fever has been shown by Ricketts to be transmitted by the wood-tick.

The most threatening cloud of chronic disease in the South, hookworm, has been dissolved by

the wand of Aesculapius. Through the labors of physicians and the beneficence of the Rockefeller Institute, the weakened, anemic, shiftless "poor white" has, by the use of thymol, been freed from the parasite. There is yet so much to discover. It requires a vision and endless, patient, animal experimentation. Claude Bernard said that whenever he left his laboratory he put on the cloak of his imagination in order to know where next to look, through experimentation, for Truth. The microbic causes of smallpox, of measles, of mumps, of chickenpox and of the much-dreaded encephalitis (so-called sleeping sickness) are as yet undetected. And many chronic diseases are still eluding an accurate analysis and a cure. Lest we be vainglorious, let us hasten to remember that there is as yet no specific for pneumonia, which, with the other acute respiratory diseases, destroys more lives every day than any other one ailment.

Cancer, the most pitiless of all maladies, is our rebellious and still elusive foe. It has not yielded up its murderous secret. We know all about its life history except the very beginning. It is regularly curable in its first stages, in many cases by surgery, in many by radium, and in others by the roentgen ray; but its bacterial causes, if such there be, still elude the patient investigator. The honor and benefit of this great discovery is more to be desired by the physician than the wealth of Midas, the wisdom of Solomon or the glory of Napoleon.

The fiery serpent that bit the children of Israel when they wandered through the wilderness was possibly the guinea-worm, which enters the body as a water-flea, develops, and ultimately lies coiled under the skin, from 1 to 6 feet in length. It formerly was coaxed out by winding it on a stick little by little each day. Then the zoologist found that it seeks water in which to lay its eggs, and will naively crawl out if the affected leg or arm is simply submerged in water for a few hours.

The mysterious is so simple when revealed by science! And so our learning advances little by little. Each of the myriad of discoveries for the protection of man against his environmental enemies is almost akin in comparative magnitude to the body of a single tiny coral insect in the great structure to which it contributes. Thus we rear the eternal structure of the Temple of Medicine.

PERIODIC HEALTH EXAMINATION

The real romance of present-day medicine is to prevent or to discover early the degenerative conditions of the great organs, the heart, kidneys, liver and brain. All the saving in life has been in the prevention of infant mortality in the control of contagious diseases. Eternal vigilance of every individual by his physician is the price of lengthened life in the middle aged.

As civilization can be measured by the statistics of public health, so sanitation is an expression of humanitarian impulses coupled with intelligent and expert application of medical knowledge to the community. Preventive medicine has made phenomenal progress in recent years. Particularly is this exemplified in the unsurpassed efficiency of the American army from the point of view of health during the World War. It was the cleanest army the world has ever seen. There were required more than 35,000 of the flower of the American medical profession to make and keep it fit to fight. None but the regular practitioners of medicine were permitted to touch the bodies of the precious soldiers in cantonment or advanced sector; but the noncombatants were constantly attacked at home, as always, by bizarre methods of treatment, so called, of a type which, as Barnum said, the American people love.

Community health is much in advance of the prevention of illness in the individual. Physicians have been so busily occupied in the care of the acutely sick that they may have had little time and have given scant attention to those who are in apparent health. People in great numbers have been amazed, when resting securely in the supposed enjoyment of perfect health, to find that an examination for life insurance revealed some entirely unsuspected malady, such as Bright's disease, diabetes or heart disease, that could and should have been easily detected long before. One third of the people who die from heart disease or Bright's disease die before they are 50 years of age. Even apoplexy shows 15 per cent. of its mortality under 50. These three conditions cause more than one fourth of all deaths. By early detection and eradication of the causes of these fatal lesions, many unnecessary deaths can be prevented.

What does it profit a person to neglect his physical condition and the wonderful mechanism of his body, the temple of his immortal soul? All other machinery is thoroughly overhauled at regular intervals. Boilers are frequently inspected, lest they explode. We all, physicians and laymen, have ignored the tremendous importance of a periodic and thorough physical examination. We have thus neglected our patients and even ourselves. In Shakespeare's Cymbeline, the Bard sagely remarks, "By medicine life may be prolonged, yet death will seize the doctor, too."

Have a thorough physical examination on your birthday! It should be a real survey of a man's physical as well as mental status. Why should not a yearly inventory be made by one's physician of his habits, environments, occupation and dietary? If this plan could become universal, it would be the best post-graduate course in physical diagnosis that our profession as a whole could take.

From the economic side, there could scarcely be a better and closer relation between the phy-

sician and his clientele. The actual care and completeness of the examination would be in such startling contrast to the inadequacy and makeshift examination by the irregular practitioners and cults that it would be an education to patients who are not now privileged to understand really the difference between a competent, regularly graduated high-type physician and the man who without adequate preparation masquerades under the guise of a doctor. The humaneness of the thing would appeal to the patient who needs us to tell him how to keep well. We will utilize our skill in anticipating future disability. We shall be promoting the ever-widening field of preclinical medicine, and shall at last come into our own, because in the interpretation of our findings and the laying down of rules of health and conduct we shall at last be carrying out the original meaning of the word "physician," which is teacher. We must learn to deal with the brutally healthy man who never thinks of anticipating disease and forgets what a tremendously intricate and wonderfully made machine he so wofully neglects. He is very confident, yet his apparently superb stamina sometimes plays him false by throwing him entirely off his guard and making him an easy prey for some insidious disease stealthily to take hold on him. The proverb says, "Honor a physician before thou hast need of him."

It is estimated that the number of cases of sickness in this country in a year is thirteen and a half million, costing the nation a billion dollars. It is astounding to think that there are 225 million days of sickness a year in the United States. If it were possible, by nation-wide effort, to reduce the amount of sickness by 25 per cent., the total economic gain yearly would be around a quarter of a billion dollars. How can one estimate the worth in anguish relieved and death postponed? Prevention runs as a thread of gold through the fabric of medicine. Every time we prevent illness we not only preserve that one individual as a productive force, but also one or two persons who would be required otherwise to care for him. The military maxim that it is better to wound an enemy than to kill him is based on this idea.

The people should be taught that in truth there can no more be different "schools" of medicine than there can be different schools of physics, or of mathematics or astronomy. There is nothing under the sun which is of proven value that has not and will not be used by the profession in the treatment of disease. All of chemistry, of sanitation, of serums, of massage, of treatment by radium, or surgery, and of application of drugs are at our beck and call. All are utilized in the treatment of diseases. Sane men will not follow a charlatan. But if any trustworthy guide, be he physician or layman, proves that a given remedy is of value in the treatment of diseases, we will utilize it and will honor him. We should not be compelled, however, as Zinsser remarks, to eat an entire artichoke in order to get a tiny bit of really edible substance. There are, regarding healing, many decidedly fractional truths. As to some of them, the term "half truth" is an unwarranted exaggeration. "Nay," said Lord Bacon, "we see the weakness and fragility of men in sickness, as they will often prefer a mountebank or witch before the learned physician, and therefore the poets were clear sighted in discerning this folly when they made Aesculapius and Circe brother and sister, both children of the Sun."

All nonmedical agencies are enthusiastic endorsers of health examinations. Life insurance companies quickly saw a great saving in the postponement of the termination of premium periods by early detection and correction in their beginnings of chronic and fatal maladies. And the persons insured also gain, for they have their lives conserved and their longevity prolonged. Social health agencies promptly recognize a probable reduction in the cost to the public of care of the indigent sick, a wonderful increase in well-being and freedom from painful and distressing illness, and a consequent great contribution to human happiness. Yet periodic health examinations are primarily a practicing physician's direct obligation. Nothing is better calculated than they to bring about the continuity of the long-established and mutually confidential relation of the medical profession with the community it serves. To be successful, however, the idea of health examinations would require a real campaign, with the laity coöperating.

Let us have a drive for the prevention of illness by making a survey of the apparently well and devising an inventory for right living and for properly planned hygiene for the needs of each individual case among our apparently robust patients—a drive to treat the incipiently sick while they can be cured.

We will treat the mind as well as the body. It will give the opportunity to ask that most important of all questions in the investigation of the chronic case; viz., "Are you happy? If not, why not?" Can any one give more sympathetic and sane advice about the abstruse mental and emotional problems of life than the resourceful, experienced, tactful physician? Is his not the buoyant, commanding personality by virtue of the peculiar oracle-like relation which he sustains to his patient to be the scientific and sympathetic Samaritan?

> Cans't thou not minister to a mind diseased,
> Pluck from the memory a rooted sorrow,
> Raze out the hidden troubles of the brain,
> And with some sweet oblivious antidote
> Cleanse the stuff'd bosom of that perilous stuff
> Which weighs upon the heart?

A health week should be established nationally by all the health agencies of this country, with the coöperation of every one of the 90,000 mem-

bers of the American Medical Association. The press can be counted on to do its part, which is as essential as it is unfalteringly interested and helpful in all health movements. A manual for the examination is being prepared by the American Medical Association. Examination blanks can be obtained from the headquarters, making for completeness and uniformity. A copy of the examination might properly be given the patients for their information, and one kept by the physician as a permanent record. Last, but not least, is a well considered interpretation of the patient's needs, physical, occupational and mental; and comprehending advice may finally be given to meet his peculiar needs. While it is primarily a technically complete head to toe physical examination, it is more a stock-taking of the patient's physical condition and an annual audit for health guidance.

Kipling tells of a legend in which the gods stole the godhead from man, who was at that time a sort of deity. They agreed to hide it. The wisest of the gods, Brahm, hid this tiny, unstable light of the stolen godhead where man would never dream of looking for it—inside man himself. That has ever since been Brahm's secret and will always be until man himself discovers it. Can the physician not help him to find his lost godhead?

MEDICAL EDUCATION

The stupendous advance in a medical education in the last fifteen years reads like a romance. The United States contained 160 good and bad medical colleges, more than twice as many as the rest of the world. These schools have been reduced to eighty strong schools. The course has been doubled in the last three decades. More than one fourth of these schools are departments of state universities. Enormous endowments have made medical education the pampered favorite of private munificence. The medical schools of America can proudly take their place in the sun.

The supply of an adequate number of sane, resourceful, dependable physicians should have the solicitude of the profession as a whole, as well as of the medical educators. The fear has been expressed that we are overtraining our students, that the specialties are so fascinating and their teachers are so enthusiastic that too much time is devoted to them in the undergraduate years. These years should, in truth, be given to basic preparation. The student must in the four years in the medical school encompass all the broad, fundamental principles of medicine. The man who is going to become a specialist should wait until after his hospital internship and preferably some years in general practice before he takes up specialization. A specialty should be a postgraduate study, not a part of a student's first preparation.

The laboratory side also should not be overcultivated. Fundamentals should be stressed, but recondite experimental work omitted in the undergraduate course. Relatively few students are going to be purely research men, and comparatively few are temperamentally fitted for that service. It is impossible really to make of an undergraduate an expert in any of the laboratory sciences. An excess of laboratory instruction, to the deprivation of needed bedside work, will not best prepare the student for the treatment of the sick.

In this desirable correlation between the pure sciences and the clinical subjects, the student of anatomy and pathology should be brought in his first two years into contact with the patient, so that he will appreciate the relationship of his studies to the problems of disease. Much more interest would be evinced in chemistry and bacteriology if every student were early to be given a glimpse of his wonderful relation to the patient. Then later, when the purely clinical work is taken up, it is not wise to abandon the study of biochemistry and physiology. Regarding clinical work in England, the Council on Medical Curriculum has advocated the continuation in the clinic itself of anatomy, physiology, pathology and chemistry, as these apply to the problems of medicine and surgery there presented. In this country our clinical and pathologic conferences have the source of the greatest inspiration.

The new medical school of Vanderbilt University is entirely housed in the hospital, thus linking up the wards with the laboratories in an integral and intimate way. We feel that it will be a distinct gain. It will afford an unparalleled opportunity for the simultaneous study of the medical sciences and the patient. The pathologic department will be a guiding center. Fresh tissue and not merely postmortem of terminal processes will be studied. It will concentrate on the causes as well as the development of disease. With the close relation of the dispensary and the hospital, the pathologic department, where all the problems of the patient can be brought and where all the men can work as undergraduates, as interns, as residents and as members of the staff, it ought to foster a spirit of investigative interest in the patient that will be stimulating to the completest possible training.

Our British cousins speak of the American methods as encyclopedic theory, and say that our effort in diagnosis is to make such a thorough study of the patient's state that no cell remains unturned. The student must be taught, as urged by President Hadley, to distinguish between the possession of information and the power or habit of thought. There is no substitute for thinking. Knowledge is proud that he has learned so much; Wisdom is humble that he knows no more.

A physician who gets a good start on a limited original training may go further than his more erudite brother, but he will always be happier and more efficient if he is interested in the hu-

manities. The student must not be allowed to get so interested in the disease that he forgets the patient.

The question of entering the student into practice at an earlier age is important. It is impossible to devote to preliminary preparation less than two years of college work in biology, physics and chemistry, and it is impossible to eliminate anything from the four year medical course. The hospital year is essential. The only chance to curtail the length of time would be by saving one or two years in the high school. This can be done by the four quarter school year and no compulsory vacation at an unchangeable time, thus saving one of two years for the student with medicine as his goal.

SPECIALISM

One of the greatest romances in the art of medicine has been the amazing growth and perfection of the specialties. A man with an adequate training and a wide knowledge of disease, who devotes his entire time and thought to the problems of one department of medicine or one group of organs, can arrive at a surpassing degree of excellence. Some of the most intricate processes of relief for disease and injury are practiced by the specialists with an almost uncanny degree of dexterity. The removal of foreign bodies from the lungs by the bronchoscopic method amounts to legerdemain. The skill that is amassed by employing methods of precision over and over again becomes truly miraculous. The accumulative experience begets wisdom and judgment and a choice of the methods that are the most effectual. The development of the specialties has been possible by the focusing of original and brilliant minds on problems that are beckoning for solution. Specialism is so alluring that it is impoverishing the personnel available for the laboratories and decimating the ranks of the general practitioner. It is astounding what the country doctor, unaided by the panoply of present-day instruments of precision, accomplished by the use of his five senses and that other very essential sense—common sense. "All but eternal doom was conquered by their art."

One of the drawbacks of specialization is that it loses for the physician the personal touch and close contact with the family and with the acutely ill. The family physician has with the family during illness a personal, intimate, sacred relation which the specialist can never enjoy. The general practitioner must retake his former position of importance. The grander domain of internal medicine must remain steadfastly the soul of medicine, the center of the color standard.

THE FAMILY PHYSICIAN

The family physician has ever been the bulwark of medicine. "He shall heal the nations and defraud the tomb." His has been the labor of love as well as a superb endeavor to combat disease and rout it from its citadel. He is confronted with the most desperate conditions and has with rare resourcefulness risen to his responsibilities. The intrepidity of the country doctor in the management of the emergencies of accident and disease, the perils of childbirth, and the mastery of conditions under the most adverse circumstances is unparalleled. His calling exacts, as Kipling said, the utmost that man can give—full knowledge, a steadfast hand, exquisite judgment and skill of the highest, to be put forth not at any self-chosen moment but daily at the need of others. He knows how to guild the gloom of affliction's couch with the silver lining of Hope.

The pagans believed that the physician came from the god of music, since it was his province to keep in tune the harp of a thousand strings. The physician has been eyes to the blind, feet to the maimed, deliverer of the poor; he has caused the widow's heart to sing for joy, and has gained the blessings of him that was ready to perish. He has been the Good Samaritan, and has imitated the benevolent miracles of the Great Physician.

Who will write the epic of the family doctor? Would that a Shakespeare could weave his deeds of bravery, his tender sympathy, his discretion and tact, his cheerfulness and courage, his devotion and fortitude, into an immortal sonnet.

Oliver Wendell Holmes apostrophized the spirit of service:

> Charity is the eminent virtue of the medical profession. Show me the garret or the cellar which its messengers do not penetrate; tell me of the pestilence which its heroes have not braved in their errands of mercy; name to me the . . . practitioner who is not ready to be the servant of servants in the cause of humanity, . . . and whose footprints you will find in the path to every haunt of stricken humanity.

Yours is a glorious privilege of "inscribing your memories not on perishable marble but in the living affections of your fellow men." The war trump, the muffled drum, the measured tread of armed men, and the musket shot pealing over the grave honor the death of the soldier, but the physician who meets his death battling for Truth in the great arena of Science passes often to an inconspicuous grave, mourned only by the few who knew his worth.

At the southern entrance of St. Paul's Cathedral stands a statue of Sir Astley Cooper, by Bailey, a beautiful commemoration of the unrivaled surgical reputation of this great surgeon and of his fame as a teacher. Who will erect a monument in bronze or stone to the family physician? Would it not be fitting to perpetuate symbolically the vision of his service and the splendid part that he has played in the pioneer civilization of this country? We have commemorated our statesmen, scholars and warriors. What of the man whose life is spent in the inter-

est of humanity, for preserving their lives instead of the ruthless destruction of their bodies? An unknown British warrior lies in the crypt of Westminster Abbey to commemorate the spirit, the bravery and the sacrifice of his fellows. Above him is inscribed:

They buried him among the Kings because he had done good toward God and toward His house.

The French have immortalized their unknown soldier under the Arc de triomphe, typifying the unparalleled fervor, fearlessness and patriotism of the poilu; and we in America have enshrined our unknown soldier at Arlington. It is time that a monument be erected to the unknown family physicians—generations of them—in grateful acclaim of their unfaltering love of duty and ineffable devotion to suffering humanity.

MISCELLANY

THE MARCH EXAMINATION, CONDUCTED BY THE BOARD OF REGISTRATION IN MEDICINE

THE facts submitted by the Medical Registration Board appearing below are interesting at this time because they show a very definite purpose to make the examination accomplish that which the law fails to achieve, viz., the protection of those who may need medical attention. The rejection of twenty-six out of fifty-four applicants for registration shows conscientious work by the Board. The further evidence that graduates of colleges like Middlesex and St. Louis P. & S. have small chance of securing registration in Massachusetts as shown by the rejection of sixteen graduates of these colleges is also encouraging to those who believe in higher standards, but disheartening to the supporters of those colleges which are recognized by only three states in the Union.

Even though admitted to the Massachusetts examinations, we may find that it will be about as hard to secure recognition as is found in the biblical illustration referring to comparative difficulties relating to getting into heaven.

REGISTERED APRIL 9, 1925

Balaban, Joseph Samuel, 341 Georgia Ave., Brooklyn, N. Y.
Bossak, Solomon, 97 Stearns Rd., Brookline, Mass.
Boyle, Hubert Allan, U. S. Marine Hospital, Chelsea, Mass.
Campbell, Alexander James Allen, Boston City Hospital, 2nd Surgical, Boston, Mass.
Caron, Armand Laurier, 8 Everett St., Southbridge, Mass.
Cortese, Anthony Edward, 119 Jasper St., Paterson, N. J.
Ein, Johannes Ernst, care of Leverett Hall, 6 Weld Ave., Roxbury, Mass.
Felton, Lester Mahan, 1086 Main St., Worcester, Mass.
Forrer, Lucie Gabrielle, Drawer F, Monson State Hospital, Palmer, Mass.
Fox, Isadore, 48 Waumbeck St., Roxbury, Mass.
Ganz, Robert Norton, 1640 Cambridge St., Cambridge, Mass.
Goldsmith, Chester Leroy, Winchester, N. H.
Goodman, David Solomon, 99 Brighton St., Boston, Mass.
Granovsky, Fannie, Otisville Sanatorium, Otisville, N. Y.
Greene, Charles Edward, 52 Eleanor St., Chelsea, Mass.
Johnson, Warren, Fifth Avenue Hospital, New York, N. Y.
Kirkland, Charles Aime, Monson State Hospital, Palmer, Mass.
Kushner, Israel Louis, 23 Brooks St., East Boston, Mass.
LeBeau, Raoul Joseph, 193 Sabin St., Pawtucket, R. I.
Logue, Francis John, 560 Main St., Woburn, Mass.
Lynch, Walter Joseph, 500 Bay St., Taunton, Mass.
McIntosh, John Joseph, 467 Prospect St., Lawrence, Mass.
Piasta, Peter Ferdinand, St. Vincent Hospital, Bridgeport, Conn.
Prior, Earle Francis, Massachusetts Homeopathic Hospital, Boston, Mass.
Sandbert, Samuel, 4 Oneida St., Boston, Mass.
Santoro, William, 211 Broad St., Perth Amboy, N. J.
Simpson, Beverly, Boston City Hospital, Medical Service, Boston, Mass.
Sleeper, Francis Harper, Evans Memorial Hospital, Boston, Mass.

REJECTED

University of Catania, Italy, 1917.
Royal University, Italy, 1914.
Massachusetts Osteopathic School, 1922, 1923.
Middlesex College of Medicine and Surgery, 1922, 1923, 1923, 1923, 1923, 1924.
St. Louis Physicians and Surgeons, 1922, 1922, 1922, 1923, 1923, 1923, 1923, 1924, 1924, 1924.
Montreal, 1924.
Constantinople, 1914.
Bowdoin, 1902.
University of Toronto, 1921.
University of Budapest, 1922.
Johns Hopkins, 1919.

Whole number examined, 54; registered, 28; rejected, 26.

NEWS ITEM

APPOINTMENTS AT THE HARVARD MEDICAL SCHOOL AT A MEETING OF THE PRESIDENT AND FELLOWS OF HARVARD COLLEGE IN BOSTON, APRIL 27, 1925

VOTED to make the following appointments for three years from September 1, 1925:

Instructors—Frank Hamilton Hunt, in Medicine; William Henry Smith, in Medicine; *Francis Minot Rackemann, in Medicine; John Homans, Surgery; James Savage Stone, Surgery; *Harry Philip Cahill, Otology; *Henry Demarest Lloyd, Syphilology.

Assistant Professors—William Lorenzo Moss, of Bacteriology and Immunology; Edwin Joseph Cohn, Physical Chemistry; Channing Frothingham, Medicine; *Cyrus Cressey Sturgis, Medicine; Richard Mason Smith, Child Hygiene; Lloyd Derr Felton, Preventive Medi-

*Promotions.

cine and Hygiene; George Cheever Shattuck, Tropical Medicine; *Frederick Carpenter Irving, Obstetrics; *Calvin Barstow Faunce, Jr., Otology.

(Consented to by the Board of Overseers at their meeting of May 11, 1925)

RECENT DEATHS

BANCROFT. — Dr. George Andrew Bancroft, a prominent practitioner of Natick, medical examiner for the past ten years of the eighth Middlesex district, died at his home in Natick, May 14, 1925, at the age of 59, after a long illness.

He was born in Lancaster, July 1, 1865, the son of Andrew J. and Mary A. Clough Bancroft, and was educated in the public schools and at Harvard Medical School, where he received his M.D. in 1890. After serving as house physician in the Taunton State Hospital he settled in practice in South Natick, after a year moving to Natick and joining the Massachusetts Medical Society. He was a member of the Meridian Lodge of Masons and one of the staff of the Leonard Morse Hospital.

He is survived by his widow and three brothers, Dr. Edward E. Bancroft of Wellesley, Charles G. Bancroft of Framingham and William L. Bancroft of Clinton.

HUTCHINSON. — Dr. Walter Perkins Hutchinson, for 30 years a member of the Abington School Board and athletic director of the high school, died at his home in that town, May 14, 1925, at the age of 58.

He was born in Farmington, Me., June 10, 1866, and was educated in the schools of his native town and at Harvard Medical School, where he was graduated with the class of 1901. When he had completed a three months' service as resident physician in the Infants' Hospital, Boston, he settled in Abington and became a member of the Plymouth District Medical Society, one of the district societies of the Massachusetts Medical Society. Dr. Hutchinson was prominent in town affairs and was affiliated with John Cutler Lodge, A. F. A. M., and with Abington Council, Royal Arch Chapter.

O'MALLEY.—Dr. Edward Francis O'Malley died at his home in Fitchburg, May 11, 1925, at the age of 45.

He was a graduate of Baltimore Medical College in 1904 and joined the State medical society the following year.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

Diseases Reported for the Week Ending May 16, 1925

Chickenpox	148	Ophthalmia neonatorum	22
Diphtheria	79	Pneumonia, lobar	124
Dog-bite requiring anti-rabic treatment	13	Scarlet fever	245
		Septic sore throat	4
Encephalitis lethargica	4	Syphilis	39
		Suppurative conjunctivitis	11
Epidemic cerebrospinal meningitis	2	Trachoma	1
		Tuberculosis, pulmonary	137
German measles	276		
Gonorrhea	75	Tuberculosis, other forms	28
Influenza	17		
Measles	818	Typhoid fever	10
Mumps	77	Whooping cough	150

RHODE ISLAND STATE BOARD OF HEALTH

Contagious Diseases Reported for the Week Ending April 18, 1925

Diphtheria	9	Scarlet fever	25
Measles	8	German measles	7
Whooping cough	6	Smallpox	7
Mumps	1	Influenza	10
Septic sore throat	1	Pneumonia	1
Chickenpox	24		

Contagious Diseases Reported for the Week Ending April 25, 1925

Diphtheria	10	Influenza	6
Mumps	7	German measles	11
Chickenpox	33	Scarlet fever	36
Poliomyelitis	1	Smallpox	2
Ophthalmia neonatorum	1	Measles	3
		Whooping cough	15
Typhoid fever	1	Pneumonia	2

Contagious Diseases Reported for the Week Ending May 2, 1925

Diphtheria	7	Influenza	1
Whooping cough	1	Smallpox	1
Measles	2	Scarlet fever	16
Pneumonia	1	Chickenpox	10
Typhoid pneumonia	1	Mumps	1
Typhoid fever	2	German measles	6

CONNECTICUT WEEKLY MORBIDITY REPORT

Week Ending May 9, 1925

Diphtheria	19	Conjunctivitis inf.	24
Last week	28	Encephalitis epid.	2
Diphtheria bacilli carriers	5	German measles	36
		Influenza	7
Typhoid fever	4	Mumps	9
Last week	6	Paratyphoid fever	4
Scarlet fever	96	Pneumonia (broncho)	19
Last week	107	Pneumonia (lobar)	26
Measles	116	Tuberculosis (pul.)	14
Last week	207	Tuberculosis (other forms)	4
Whooping cough	118		
Last week	165	Gonorrhea	16
Cerebrospinal men.	2	Syphilis	22
Chickenpox	41		

REPORTS AND NOTICES OF MEETINGS*

NEW ENGLAND NURSES' ASSOCIATION WILL MEET IN BOSTON, JUNE 3, 4, 5, 1925

Headquarters for Registration and Business Meeting will be at 585 Boylston Street, Boston, Mass.

MORNING SESSION

10.00 A. M. Business meeting of the Board of Directors. 10.30 A. M. Registration of Delegates.

The other sessions will be held at the John Hancock Building, Clarendon Street, Boston, Mass.

A very interesting program has been arranged which will cover most of the problems

*Notices of meetings must reach the Journal office on the Friday preceding the date of issue in which they are to appear.

of nursing. Several prominent physicians will address some of the section meetings.

The detailed program may be secured by applying to Miss Mary Alice McMahon, Boston State Hospital, Boston 24, Mass.

HAMPSHIRE DISTRICT MEDICAL SOCIETY

At the Annual Meeting of the Hampshire District Medical Society held May 12 at Forbes Library, the following named officers were elected for the ensuing year: President, Dr. Frank Dow, Northampton; Vice-president, Dr. Willard B. Segur, Enfield; Secretary and Treasurer, Dr. Luther O. Whitman, Northampton; Librarian, Dr. Frank H. Smith, Hadley; Commissioner of Trials, Dr. W. P. Stutson, Cummington; Censors, Dr. A. J. Bonneville, Supervisor, Hatfield; Dr. O. W Cobb, Easthampton; Dr. J. D. Collins, Northampton; Dr. G. W. Rawson, Amherst; Dr. E. A. Whitney, Northampton; Councilors, Dr. A. J. Bonneville, Hatfield; Dr. C. A. Byrne, Hatfield; Dr. A. J. Houston, Northampton; Councilor for Nominating Committee, Dr. A. J. Houston, Northampton, as principal, and Dr. E. D. Williams, Easthampton, as alternate.

It was ordered that a copy of the resolutions on the death of Dr. Paul A. Hudnut be spread upon the records of the Society and a copy be sent to Mrs. Hudnut.

Dr. G. W. Rawson of Amherst, Massachusetts, the retiring President, gave a personal resumé of years of practice entitled "The Practice of Medicine in Retrospect."

ESSEX NORTH DISTRICT MEDICAL SOCIETY

Eighty-Fourth Annual Meeting was held in Lawrence, Wednesday, May 6, 1925.

Dinner was served at 12.30 o'clock.

The business meeting followed the dinner.

After the business meeting a paper and demonstration upon the living subject was presented by Wm. B. Breed, M.D., of Boston, Assistant in Medicine at Harvard Medical School, and a member of the Committee on Health Examinations of the Massachusetts Medical Society. (one hour)

Officers elected for the ensuing year are: President, Randolph C. Hurd, Newburyport; Vice-President, Roy V. Baketel, Methuen; Secretary, J. Forrest Burnham, Lawrence; Treasurer, Edw. H. Ganley, Methuen; Censors, Fred S. Smith, No. Andover, Supervisor; John E. Bryant, Haverhill; Edw. P. Laskey, Haverhill; Roland S. Toppan, Newburyport; Chas. J. Burgess, Lawrence; Councilors, Gustave E. Kurth, Lawrence; Forrest Burnham, Lawrence; Thos. R. Healy, Newburyport; Wm. W. Ferrin, Haverhill; Adelbert M. Hubbell, Haverhill; Frank W. Snow, Newburyport; W. Dacre Walker, Andover; Elmer S. Bagnall, Groveland; Fred S. Smith, No. Andover; Nominating Councilor, Thomas R. Healy, Newburyport; Alternate, Adelbert M. Hubbell, Haverhill; Commissioner on Trials, Israel J. Clarke, Haverhill.

Voted to recommend to the members that $5.00 be a minimum fee for health examinations.

F. Dennette Adams, M.D., of Boston, also a member of the same committee, joined with Dr. Breed in the demonstration of Health Examinations.

The matter of a choice between medical and nurse anaesthesia was considered at length.

J. Forrest Burnham, *Reporter.*

NEW ENGLAND HEALTH INSTITUTE

The New England Health Institute is really a school in public health. A week of instructive public health lectures was given during the Portland, Maine, meeting on the latest matters in public health and, like the previous Institute, was a success for not a single lecture was omitted. There were 80 lectures in all with two evening meetings and two noon meetings. The registration mark was particularly good. Persons attending from the following states were:

Maine	243
Massachusetts	61
Connecticut	43
New Hampshire	30
Rhode Island	12
Vermont	11
New York	9
Washington, D. C.	2
China	1

New Hampshire has been selected as the meeting place for next year with Chas. Duncan, M.D., Secretary of the State Board of Health, as director of the Institute.

NUTRITION INSTITUTE

A Nutrition Institute will be given under the auspices of the Queensboro Tuberculosis Association and the Tuberculosis Committee of the Brooklyn Bureau of Charities, in coöperation with the New York Board of Health and Board of Education, at the Visiting Nurse Association Building, Park Avenue and Fortieth Street, Manhattan, June 1 to 13, inclusive.

Information as to accommodations, hours, etc., can be obtained by writing Miss Mabel Skilton, Secretary, Nutrition Clinics for Delicate Children, Inc., 44 Dwight Street, Boston, Mass.

SOCIETY MEETINGS

New England State Medical Societies

The annual meetings of the New England State Medical Societies are scheduled as follows:

Maine Medical Association—Bar Harbor, June 23-25, 1925.
Massachusetts Medical Society—Boston, June 9-10, 1925.
Rhode Island Medical Society—Providence, June 4, 1925.
Vermont State Medical Society—St. Johnsbury, Oct. 15-16, 1925.